

UPPER LOS ANGELES RIVER AREA WATERMASTER

CITY OF LOS ANGELES VS. CITY OF SAN FERNANDO, ET AL
CASE NO. 650079 - COUNTY OF LOS ANGELES

INVESTIGATION OF THE MARQUARDT COMPANY
AND OTHER SITES THAT ARE
SOURCES OF CONTAMINATION TO THE
SAN FERNANDO BASIN AND THE
DRINKING WATER SUPPLY FOR LOS ANGELES

OCTOBER 1998

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November 10, 1998

Colleagues:

Marquardt Report

This letter transmits the report entitled: Investigation of the Marquardt Company and Other Sites That Are Sources of Contamination to the San Fernando Basin and the Drinking Water Supply for Los Angeles prepared in October 1998 in response to concerns expressed by the Los Angeles City Council and the Los Angeles County Board of Supervisors. The Watermaster also thanks the following individuals for their time and assistance in the preparation of the aforementioned report:

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Paul Lisak, Los Angeles County Fire Department (LACFD)
Tom Klinger, LACFD
Arturo Aguirre, Los Angeles County Department of Health Services
Alex Carlos, California Regional Water Quality Control Board (RWQCB)
Arthur Heath, RWQCB
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Bob Krug, DTSC
Yolanda Garza, DTSC
Andres Cano, DTSC
Stefan Cajina, California Department of Health Services (DHS)
Vera Melnyk-Vecchio, DHS
Duane James, U.S. Environmental Protection Agency

If you have any questions regarding this report or the San Fernando Basin, please contact me at 213.367.1020.

Sincerely,



MELVIN L. BLEVINS
ULARA Watermaster

Enclosure

EXECUTIVE SUMMARY

In response to concerns expressed by the Los Angeles City Council and the Los Angeles County Board of Supervisors, the Watermaster of the Upper Los Angeles River Area (ULARA), in cooperation with Los Angeles Department of Water and Power (DWP), has prepared this report that addresses the following:

- Investigation of the Marquardt Company in Van Nuys with regard to their contaminating the San Fernando Basin (SFB), a source of water supply for Los Angeles.
- Assessment of the threat to the safety of the drinking water supply due to the contamination from the Marquardt Company.
- Information on other sites that are sources of contamination to the SFB.
- Recommendation with regard to permitting future development of these sites.

The Watermaster met with the following regulatory agencies and water purveyors who are involved with the management, protection, and remediation of the SFB and who also provided input in the preparation of this report:

City of Los Angeles, DWP
City of Burbank
City of Glendale
Los Angeles Fire Department
Los Angeles County Fire Department
Los Angeles County Department of Health Services
Los Angeles County Department of Public Works
California Department of Toxic Substances Control
California Regional Water Quality Control Board
California Department of Health Services
U. S. Environmental Protection Agency

The participation by the aforementioned agencies demonstrates that a multi-agency effort and interagency coordination is ongoing to ensure that the SFB will continue to provide a high-quality, reliable, and economic groundwater supply for Los Angeles, Burbank and Glendale.

Report Contents and Summary

The report provides a brief description of the roles and responsibilities of each agency in performing or overseeing activities in the SFB, especially in the area of site investigations to identify the sources of contamination and their required characterization and remediation of the contamination. The report identifies the numerous remediation activities that are actively being deployed or planned in the SFB.

The report includes lists of the active site investigations in the SFB along with the associated lead agencies responsible for conducting the investigations.

The report reviews the specific investigation regarding the Marquardt Company and concludes that an active investigation of this facility is being conducted by the California Department of Toxic Substances Control (DTSC). The DTSC has experienced difficulty in gaining compliance by the Marquardt Company to provide a proper characterization of the nature and extent of their contamination and to develop an approved remediation work plan. However, the DTSC has issued an Enforcement Order for Corrective Action to the Marquardt Company on October 5, 1998 as a stronger measure to force their compliance.

The report indicates that actions such as those being taken by the DTSC against the Marquardt Company to protect and remediate the SFB do receive interagency support.

The report also indicates that the Marquardt site does not pose an immediate threat to the safety of the groundwater that is used for drinking water supply so long as the source is properly remediated.

Finally, it is recommended that disclosures of site investigations be required when applications for land use approvals or building permits are submitted for future development of such sites.

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LIST OF ACRONYMS

AF/yr	Acre-feet per year
County DHS	Los Angeles County Department of Health Services
County DPW	Los Angeles County Department of Public Works
DHS-ODW	California Department of Health Services, Office of Drinking Water
DTSC	California Department of Toxic Substance Control
DWP	Los Angeles Department of Water and Power
EPA	U. S. Environmental Protection Agency
ICC	Interagency Coordinating Committee
LACFD	Los Angeles County Fire Department
LAFD	Los Angeles Fire Department
MCL	Maximum Contaminant Level
PCE	Perchloroethylene
PRP	Potentially Responsible Party
RI	Remedial Investigation of Groundwater Contamination in the San Fernando Valley
RWQCB	California Regional Water Quality Control Board
SCPB	Southern California Permitting Branch
SFB	San Fernando Basin
SFV	San Fernando Valley
SMCO	Site Mitigation Cleanup Operations
TCE	Trichloroethylene
TCFM	Trichlorofluoromethane
ug/L	Micrograms per liter
ULARA	Upper Los Angeles River Area
VOC	Volatile Organic Compound
1,1 DCE	1,1 Dichloroethylene

1.0 SAN FERNANDO BASIN

1.1 WATER SUPPLY

The San Fernando Basin (SFB) is a vital source of water supply for Los Angeles and is an important water resource for all of southern California. Los Angeles has an annual right of approximately 90,000 acre-feet per year (AF/yr) of SFB groundwater supply, which is approximately 15 percent of the water supply for Los Angeles or enough to serve roughly 500,000 residents. Los Angeles also has the right and the capability of storing water in the SFB for use to supplement its annual water right to address long-term emergencies or extended drought conditions.

The Los Angeles Department of Water and Power (DWP) has sufficient capacity in its groundwater pumping, treatment, and distribution facilities to expand the SFB supply to comprise approximately 30 percent of the total water supply for Los Angeles.

To ensure the DWP's continued maximum utility of the SFB to provide a reliable, high-quality, and economical water supply, the DWP has been prominent in coordinating the activities of various agencies to address the following critical elements of the SFB:

1. Management of the SFB operations
2. Protection of the SFB water quality
3. Remediation of the SFB

The primary agencies that are involved with managing, protecting, and remediating the SFB include the following:

- Watermaster of the Upper Los Angeles River Area (ULARA)
- City of Los Angeles, DWP
- City of Burbank
- City of Glendale
- Los Angeles Fire Department (LAFD)
- Los Angeles County Department of Public Works (County DPW)
- Los Angeles County Fire Department (LACFD)
- Los Angeles County Department of Health Services (County DHS)
- California Regional Water Quality Control Board (RWQCB)
- California Department of Toxic Substances Control (DTSC)
- California Department of Health Services, Office of Drinking Water (DHS-ODW)
- U. S. Environmental Protection Agency (EPA)

Brief descriptions of the roles, responsibilities, and activities of these agencies related to the SFB are presented in Section 2.0.

1.2 DETECTION OF GROUNDWATER CONTAMINATION

Volatile organic compounds (VOCs) were initially detected in a well owned by the Valley County Water District in 1979. In 1981, the California legislature passed Assembly Bill AB 1803 that required all groundwater sources to be tested for VOCs and other industrial chemicals. These tests found the presence of certain VOCs, primarily trichloroethylene (TCE) and perchloroethylene (PCE), in many of the water supply wells in the San Fernando Valley (SFV). As a result, a number of water supply wells that had excessive concentrations of TCE or PCE were removed from service by the water purveyors.

To address the groundwater contamination problem that was discovered, a number of agencies including Los Angeles, Burbank, Glendale, the Watermaster, the RWQCB, the DHS, the Mayors Offices for Los Angeles and for Burbank, and the Southern California Association of Governments developed the "Groundwater Quality Management Plan, San Fernando Valley Groundwater Basin", dated July 1983. This plan evaluated much of the available groundwater data in the SFV at that time and produced recommendations to address the contamination problem and to protect the water quality of the groundwater basins in the SFV.

One of the recommendations was the establishment of the Interagency Coordinating Committee (ICC) in 1983. The ICC continues to meet on a quarterly basis and consists of representatives from the water purveyors with water rights to SFV groundwater, the aforementioned regulatory agencies, and private parties involved with site remediation activities. The ICC meetings are to ensure that all involved agencies are coordinating their efforts to execute on the other recommendations and to manage, protect, and remediate the groundwater supply.

By 1986, the EPA had identified four sites in the SFV for designation on the National Priority List (NPL) and initiated investigations and remedial actions for these NPL sites under the Superfund Program.

Investigations of source sites of contamination have been continuing as described in Section 3.0 of this report.

Three groundwater remediation projects that are operated by water purveyors with SFB water rights were placed into service in 1989, 1992, and 1996 with other facilities being developed as indicated in Section 2.3 of this report.

2.0 MANAGEMENT, PROTECTION, AND REMEDIATION OF THE QUALITY OF THE SFB WATER SUPPLY

2.1 MANAGEMENT OF THE SAN FERNANDO BASIN OPERATIONS

Essential aspects involved with the management of the SFB include the following:

1. Control of groundwater pumping
2. Control of recharging the SFB at the spreading grounds
3. Monitoring of groundwater conditions in response to pumping and spreading activities
4. Collection and evaluation of data to refine the knowledge of the physical characteristics of the SFB geology and hydrogeology
5. Evaluation of computer simulations of various SFB pumping and spreading operations with the SFB Groundwater Flow Model to estimate the SFB response
6. Coordination of all applicable agencies to ensure that the SFB operations are compatible with regard to maintaining water quality objectives of these agencies

The SFB operations consist of groundwater pumping and basin recharge by spreading native, imported, and recycled water at the spreading grounds overlying the SFB.

The groundwater pumping in the SFB is controlled by parties with water rights and pumping capabilities including the following:

<u>Party</u>	<u>Approximate Water Right</u>
Los Angeles	90,000 AF/yr
Burbank	5,000 AF/yr
Glendale	5,500 AF/yr

The aforementioned SFB water rights were established under a California Superior Court Judgment (Judgment) for Case No. 650079, City of Los Angeles vs. City of San Fernando, et. al., dated January 26, 1979. Water rights were established based on maintaining the "native safe yield" for the SFB, which is the largest of the groundwater basins within the ULARA.

Spreading water for groundwater recharge in the SFB is controlled primarily by the County DPW, which operates and maintains the Branford, the Hansen, the Lopez, the Pacoima, and Tujunga Spreading Grounds. The DWP will resume its operation and maintenance of the Headworks Spreading Grounds after securing regulatory approvals to spread recycled water at this facility. The DWP also coordinates with the County DPW to arrange for the spreading of imported water when it is available.

The Judgment also established the position of the Watermaster to administer provisions of the Judgment and to oversee the SFB operations. The Watermaster acts in accordance with the Judgment, the "ULARA Policies and Procedures" and the ULARA Administrative Committee that is composed of Los Angeles, Burbank, Glendale, San Fernando, and the Crescenta Valley Water District.

One of the primary responsibilities of the Watermaster is to account for the pumping and recharge activities in the ULARA. These accountings are included in the following two annual reports that are produced by the Watermaster:

1. "Watermaster Service in the Upper Los Angeles River Area, Los Angeles County" (Watermaster Report)
2. "Groundwater Pumping and Spreading Plan for the Upper Los Angeles River Area, Los Angeles County" (Pumping and Spreading Report)

Copies of the Watermaster Report and the Pumping and Spreading Report are available by contacting the Office of the Watermaster of the Upper Los Angeles River Area (see Section 6.0).

2.2 PROTECTION OF THE SAN FERNANDO BASIN WATER QUALITY

Essential aspects involved with the protection of the SFB against contamination and water quality degradation include the following:

1. Identification of facilities (such as landfills, chemical companies, and aircraft manufacturers) that are possible sources of contamination to the SFB
2. Identification of facilities or activities that may possibly degrade the water quality of the SFB
3. Evaluation of the operations and practices of these facilities with regard to possible discharges to the SFB
4. Investigation of facility sites to characterize the nature and extent of any soil and/or groundwater contamination associated with the facility
5. Development, execution, and evaluation of any required soil and/or groundwater remediation by facilities determined to be sources of contamination to the SFB
6. Evaluation of projects that involve artificial recharge of the SFB with recycled water
7. Monthly, quarterly, semi-annual, and annual sampling and analysis of groundwater from the monitoring wells in the SFB to provide up-to-date data regarding the characterization of the SFB water quality

The RWQCB and the DTSC are the two primary agencies involved with identifying and evaluating possible sources of contamination in the SFB. These two agencies also review, approve, and enforce remedial measures for the sites that are determined to be

sources of contamination. The EPA provides some federal funding to the RWQCB and the DTSC to support their source investigation work.

The RWQCB evaluates and regulates all surface water discharges that ultimately enter the storm water control systems of which some can be operated to divert native water to various SFV spreading grounds for SFB recharge.

The LAFD addresses the problem of underground storage tanks in the SFV that are leaking or that do not comply with current standards.

The LACFD and the County DHS evaluate reports of possible Proposition 65 discharges from the DTSC, the RWQCB, and other agencies and have the final decision on the releases of Proposition 65 reports to the public.

The LACFD Health Hazardous Materials Division (HHMD) staff oversee the hazardous waste handling and disposal practices of hazardous waste generators in the City of Los Angeles by performing compliance inspections of commercial/industrial facilities which produce (generate) hazardous waste. HHMD staff may also oversee certain hazardous waste release assessments and remediations, coordinating with appropriate state and local agencies.

The cities of Los Angeles, Burbank, Glendale, and San Fernando were all involved with eliminating the use of septic tank systems, where feasible, within the ULARA.

The RWQCB and the DHS-ODW evaluate and regulate projects and activities that involve the recharge of the SFB with recycled water.

The DHS-ODW evaluates and regulates all projects and activities that may affect SFB groundwater that is used for potable supply.

The Watermaster coordinates the source investigations and protective activities for the SFB by the various agencies through the ICC and the ICC Subcommittee that meet on a quarterly basis. Progress reports of these activities are reported through the minutes of the ICC and ICC Subcommittee meetings and in the annual Watermaster Report.

The DWP samples and analyzes groundwater from its monitoring wells at monthly, quarterly, semi-annual, and annual intervals to assure that the SFB groundwater supply is not under threat by contamination and that corrective action can be taken if a longer term threat is possibly foreseen. The EPA also conducts a similar groundwater monitoring program to secure more water quality information regarding the SFB.

The DWP, Burbank, Glendale, San Fernando, and the Crescenta Valley Water District all sample and analyze groundwater, based on vulnerability assessments provided by the DHS-ODW, from their water supply wells and report the data to the DHS-ODW to ensure compliance with drinking water standards.

2.3 REMEDIATION OF THE SAN FERNANDO BASIN

As a result of the many investigations that have occurred to characterize the SFB and its water quality, a number of facilities to remediate the SFB have been or are being developed. Some of the larger groundwater remediation facilities are being developed or operated by the water purveyors in the SFB while a number of small, site-specific facilities are also in operation to address individual soil and/or groundwater contamination sources.

Facilities that are operated by the water purveyors to provide potable supply are regulated by the DHS-ODW. Site-specific facilities that do not produce water supply for potable use are regulated by the EPA, the RWQCB or the DTSC. The EPA and the Watermaster oversee and evaluate the effects of all these facilities on the SFB.

A current list of the various SFB remediation projects is summarized in Table 1. Figure 1 shows the locations of the various SFB remediation projects.

The status of these projects is discussed regularly at various meetings such as the ICC, the ICC Subcommittee, the EPA Management Committee, and the ULARA Administrative Committee. Reports regarding the status of these projects are included in various meeting minutes, the Watermaster Report, and the EPA Newsletters.

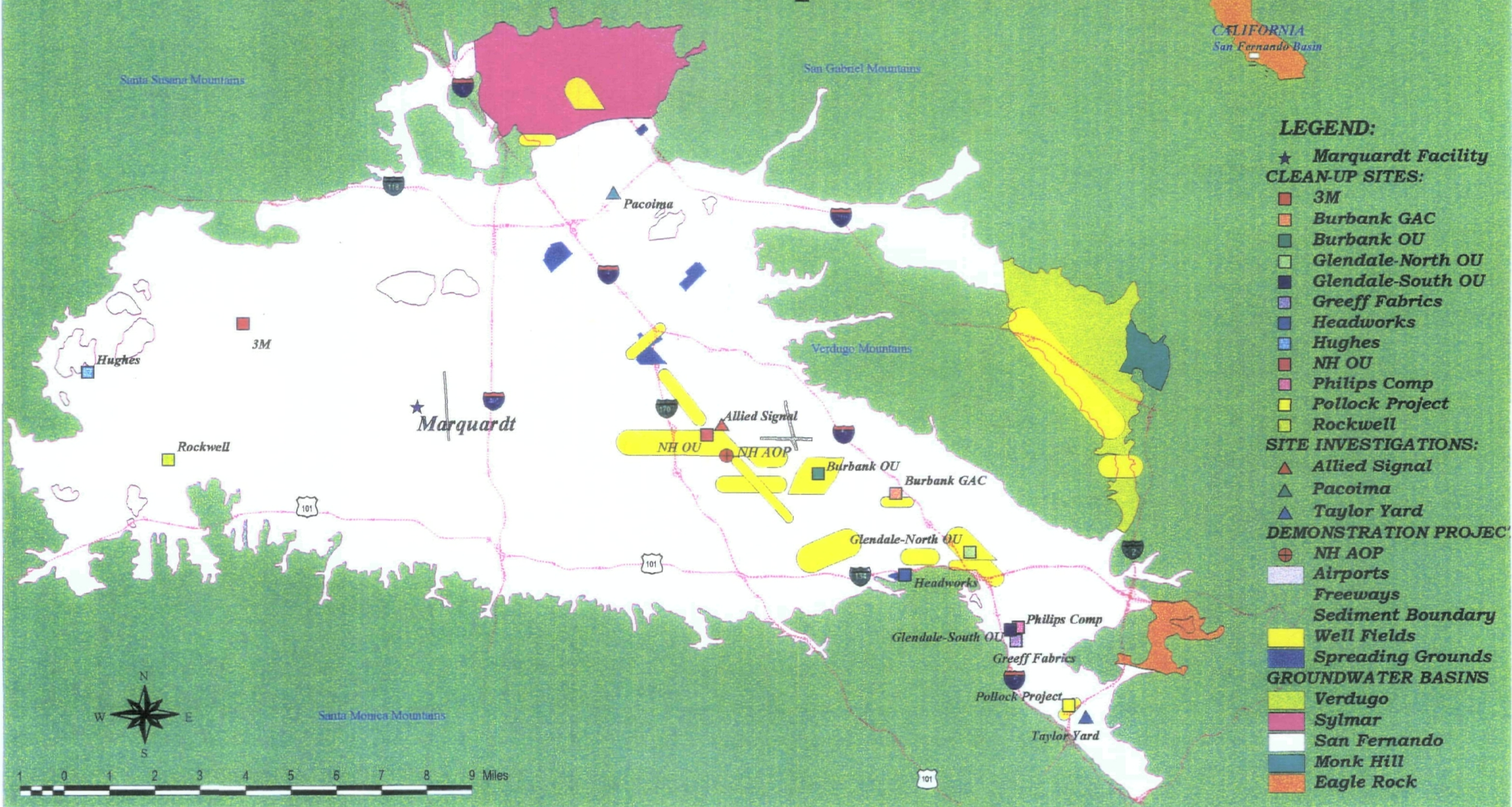
TABLE 1**GROUNDWATER REMEDIATION PROJECTS IN THE SAN FERNANDO BASIN**

<u>Owner/Treatment Facility & Location</u>	<u>Capacity</u>	<u>Date In Service</u>
Los Angeles Department of Water and Power North Hollywood Operable Unit 11845 Vose Street, North Hollywood, CA	2,000 gpm	12-89
City of Burbank Burbank Groundwater Treatment Plant 320 No. Lake Street, Burbank, CA	2,000 gpm	11-92
City of Burbank Burbank Operable Unit 2032 Hollywood Way, Burbank, CA	9,000 gpm	1-96
City of Glendale Glendale Operable Unit – North Highland Avenue, Glendale, CA	3,300 gpm	1999 Estimated
City of Glendale Glendale Operable Unit – South Highland Avenue, Glendale, CA	1,700 gpm	1999 Estimated
Los Angeles Department of Water and Power Pollock Wells Groundwater Treatment Plant 2660 Fletcher Drive, Los Angeles, CA	3,000 gpm	12-98 Estimated
Los Angeles Department of Water and Power Headworks Wells Groundwater Treatment Plant Headworks Spreading Grounds, Los Angeles, CA	13,500 gpm	3-02 Estimated
Greeff Fabrics 4000 Chevy Chase Drive, Los Angeles, CA	12 gpm	7-93*
Hughes Missile Systems Company 8433 Fallbrook Avenue, Canoga Park, CA	15 gpm	3-95
Philips Components 4561 Colorado Boulevard, Los Angeles, CA	150 gpm	7-88
Rockwell-Rocketdyne 6633 Canoga Avenue, Canoga Park, CA	300 gpm	4-93
3M 19901 Nordhoff Street, Northridge, CA	35 gpm	5-85

* Project completed in 1998

Figure 1.0

San Fernando Basin Groundwater Investigation and Clean-up Sites



3.0 INVESTIGATIONS OF FACILITIES FOUND OR SUSPECTED TO BE SOURCES OF CONTAMINATION TO THE SAN FERNANDO BASIN

3.1 LISTING OF SOURCE INVESTIGATIONS

A current list of the source investigations being conducted by the DTSC is included in Appendix A.

A current list of the source investigations being conducted by the RWQCB is included in Appendix B.

A current list of the Potentially Responsible Parties (PRPs) as determined by the EPA is included in Appendix C.

3.2 ROLES OF THE VARIOUS ORGANIZATIONS IN THE SOURCE INVESTIGATIONS

The following are brief descriptions of the roles of the three primary agencies that perform the source investigation work. For more specific information regarding the investigative methodologies, evaluation criteria, enforcement powers, or other activities of these agencies, a listing of agency representatives is provided in Section 6.0.

3.2.1 California Department of Toxic Substances Control

The DTSC's mission is to protect human health and the environment from harmful exposure to hazardous substances. Exposure can be via any pathway (inhalation, dermal adsorption, and ingestion) and to any media (air, soil, surface water, and groundwater). The DTSC divides its remediation activities and oversight of the SFV sites among three Southern California Divisions that include Site Mitigation Cleanup Operations (SMCO), Southern California Permitting Branch (SCPB), and Statewide Compliance.

The SMCO's mission is to protect public health and the environment through the investigation and remediation of hazardous release sites. In order to accomplish its mission, the SMCO identifies, assesses, and executes or oversees removal or remedial actions at sites where uncontrolled releases or potential releases of hazardous substances have occurred. The SMCO uses health-risk-based assessments to determine cleanup levels in the remediation of these sites and has the authority to approve and oversee the required work. Typical sites can include former or current industrial plants, military bases, landfills, and abandoned disposal areas. The SMCO may also work in conjunction with the EPA on large areas of contaminated groundwater that underlie entire communities. All of these sites are generally under a DTSC Order, a cleanup agreement, or remediation with special funding that has been set aside due to special circumstances. The SMCO maintains a database, CalSites, which lists identified or potential hazardous substance release sites. CalSites can provide a short report that includes a brief history of

a site, a record of cleanup activities, contaminants of concern, scheduled future cleanup activities, and the current status of the site.

The SCPB regulates various hazardous waste treatment, storage, and disposal facilities that have had or currently manage hazardous wastes through a Resource Conservation and Recovery Act permit. Some examples include major landfills, large-scale treatment facilities, and small transfer operators. The SCPB is authorized by the EPA to renew hazardous waste permits, issue new or modified permits to hazardous waste facilities, evaluate and remediate these facilities through Corrective Action Orders, and approve closures of facilities. The SCPB and the SMC0 also evaluate impacts of hazardous waste activities or remediation operations under the California Environmental Quality Act and impose mitigation measures, if necessary.

Statewide Compliance is responsible for surveillance and enforcement activities related to permitted hazardous waste facilities. Statewide Compliance responds to complaints, conducts surveillance, participates in criminal investigations, and executes programs related to transportation, financial responsibility assurance, and compliance assistance.

3.2.2 California Regional Water Quality Control Board

The RWQCB has the Groundwater Protection Division that includes the Landfill Unit, the Underground Storage Tanks Unit, the Site Cleanup Unit, and the San Fernando Valley Cleanup Program.

The San Fernando Valley Cleanup Program focuses its efforts on identification and remediation of sources of groundwater contamination within the EPA's NPL sites. This program addresses facilities that store or use chemicals, in particular, VOCs that can contaminate and degrade the water quality of the SFB if chemical use, storage, or disposal practices are improper.

For those sites that are found by the RWQCB to require remedial action, disclosure regarding the status of the remedial action would be required in the transferring of title for the property.

The RWQCB maintains a listing and status of the sites that are under investigation through its Well Investigation Program.

3.2.3 U. S. Environmental Protection Agency

The EPA addresses the NPL sites in the SFV by requiring facilities that are found to be Potentially Responsible Parties (PRPs) to provide funding for remedial actions to contain and remove VOC contamination from the SFB and other SFV groundwater basins. In the SFB, the EPA has identified PRPs to pay for the development, operation and

maintenance of the North Hollywood Operable Unit, the Burbank Operable Unit, and the Glendale North and South Operable Units that are listed in Table 1.

The EPA provides funding to the RWQCB through a cooperative agreement to assist in their source investigation efforts. The EPA provides funding to the DTSC through a multi-site cooperative agreement to ensure that State requirements are met on EPA-lead sites. The EPA has also provided funding to the DWP through a cooperative agreement for serving as the lead agency in conducting the Remedial Investigation of Groundwater Contamination in the San Fernando Valley (RI).

The RI consisted of the following elements that provide the most comprehensive understanding of the SFB to date:

- Review of all existing SFB data available at the start of the RI
- Installation, logging, and sampling of 89 monitoring wells in the SFV to provide strategic data that was lacking in the existing data
- Evaluation of all of the data to develop the characterization of the geology, hydrogeology, and the nature and extent of contamination in the SFV with TCE, PCE, and nitrate (see Figures 2, 3, and 4)
- Development of the SFB Groundwater Flow Model to perform computer simulations of SFB operations to assess the SFB response in groundwater flows and contaminant movement
- Preparation of the RI report

In addition, the DWP prepared Operable Unit Remedial Investigations and Feasibility Studies for the EPA to establish the basis for the three operable units.

Figure 2.0

San Fernando Basin TCE Contamination



Figure 3.0

San Fernando Basin PCE Contamination



Figure 4.0

San Fernando Basin NO3 Contamination



4.0 MARQUARDT COMPANY INVESTIGATION BY THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

This summary of the ongoing investigation of the Marquardt Company (Marquardt) is based on a memorandum report prepared by the DTSC, dated September 1, 1998, that evaluated the report entitled "Marquardt Company/Ferranti International, Groundwater Monitoring Well Installation and Sampling, the Marquardt Company 16555 Saticoy Street, Van Nuys, California, July 1998" (Marquardt Report). The Marquardt Report is a site evaluation report that was prepared by SCS Engineers, a consultant for Marquardt. A copy of this DTSC memorandum report is included in Appendix D.

4.1 PROPERTY INFORMATION

Location: 16555 Saticoy Street, Van Nuys, CA (see Figures 5 and 6)

Size: 52.8+ acres (usable)

Zoning: LA M2-1 (Heavy Manufacturing)

Site Description: Irregularly shaped, level in topography, with public street frontage on Saticoy Street, Ruffner Avenue, and Hayvenhurst Avenue. The site includes a number industrial buildings, facilities and underground storage tanks.

Current Land Use: Rocket testing and development

4.2 SUMMARY OF DTSC INVESTIGATION

Purpose of Investigation

The purpose of the investigation is to characterize the nature and extent of soil and groundwater contamination resulting from the activities that were conducted by the Marquardt Company and to develop a DTSC-approved workplan for Marquardt to remediate the site. Once the DTSC is satisfied that Marquardt has executed the workplan and has successfully remediated the site, the DTSC can issue a closure for the site.

Background of the Marquardt Company Site Investigation

The DTSC had detected contamination under permitted units and determined that a clean closure to background levels was not feasible. In August 1995, the DTSC agreed to permit Marquardt to perform a risk-based closure assuming that the extent of the contamination was limited to shallow soils.

In September 1995, Marquardt submitted a health risk assessment to the DTSC. In January 1996, the DTSC did not approve the health risk assessment since the assessment

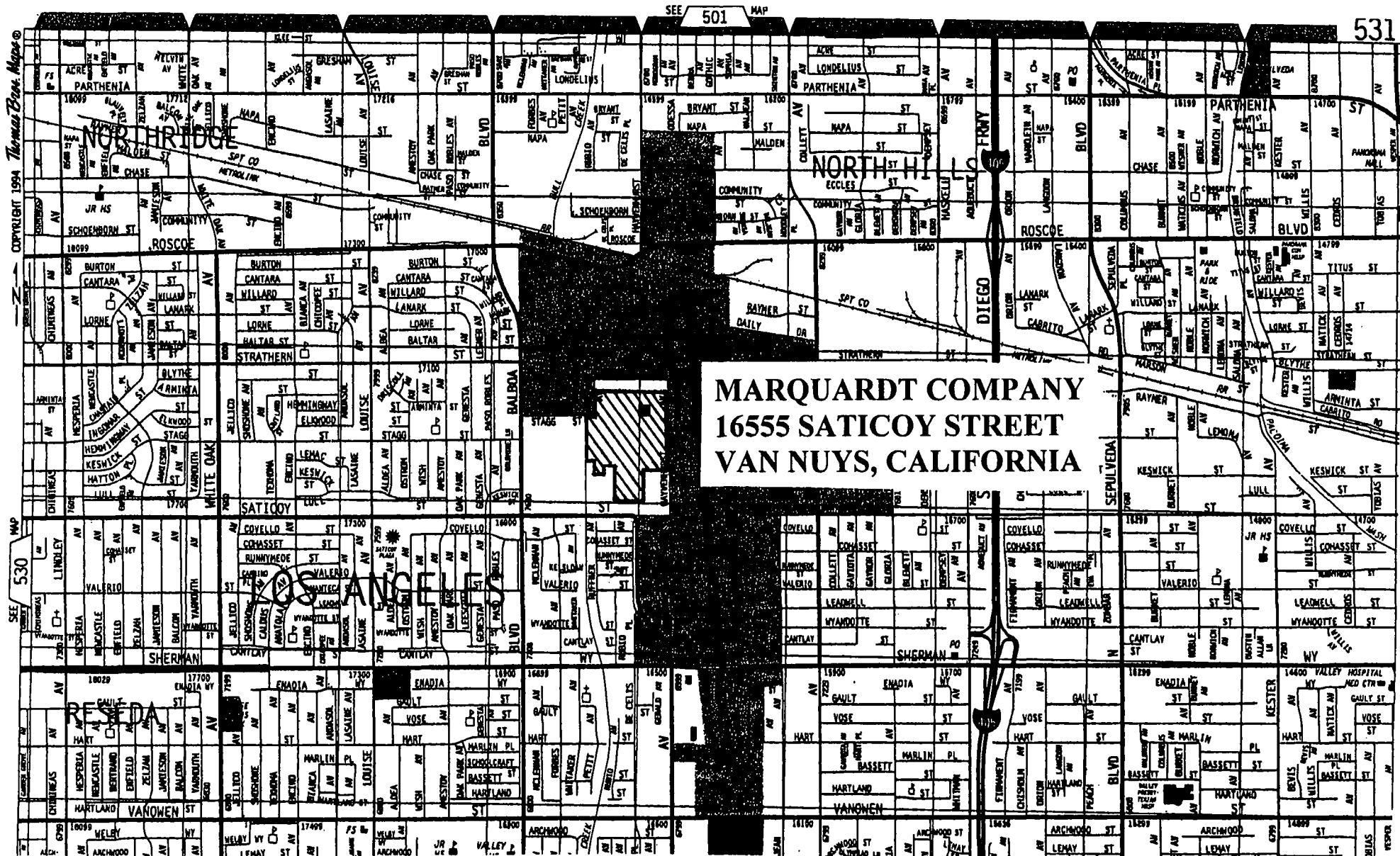


FIGURE 5

1996

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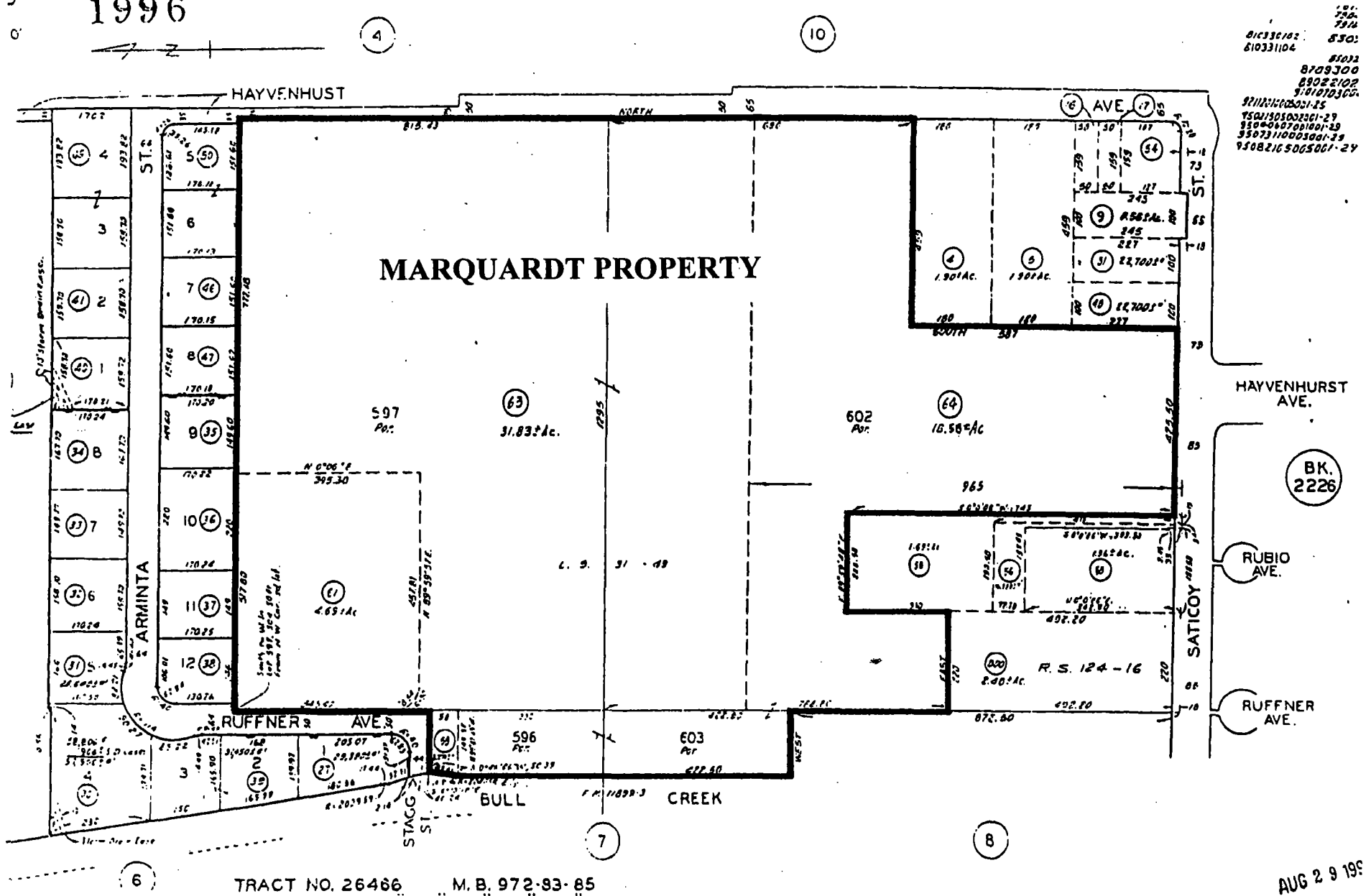


FIGURE 6

AUG 29 1996

did not include a determination as to the vertical extent of the contamination with VOCs. The DTSC was also unable to secure an agreement with Marquardt to develop and proceed with an approved workplan that met the requirements of the relevant EPA and DTSC guidances.

In May 1996, Marquardt proceeded with soil vapor and soil matrix sampling without a DTSC-approved workplan and produced data that indicated that VOC contamination extended at least within 20 feet of the groundwater table. With this knowledge, the DTSC recommended that Marquardt submit a workplan for approval that characterized the nature and extent of contamination in the soil and groundwater. In November 1996, Marquardt submitted a second health risk assessment based on vadose zone modeling without DTSC concurrence with regard to the workplan. This second assessment was also found to be deficient by the DTSC due to its lack of determining the nature and extent of contamination in the soil and groundwater.

After more requests by the DTSC for Marquardt to provide an approved workplan that addressed groundwater contamination, Marquardt submitted their most recent report in September 1998 that was completed without an approved workplan. This most recent submittal did include groundwater samples that indicated VOC contamination, however, Marquardt has concluded that the groundwater contamination originated from another site.

Data

Marquardt had installed four monitoring wells and conducted one sampling of groundwater in June 1998 from each well for its most recent report. Analysis of the groundwater samples shows the following:

1,1-dichloroethylene (1,1 DCE)	15 to 150 micrograms per liter (ug/L)
Perchloroethylene (PCE)	8.8 ug/L
Trichlorofluoromethane (TCFM)	7.8 ug/L

DTSC Evaluation and Conclusions Regarding the Marquardt Report

The DTSC found the most recent Marquardt Report to again be deficient and strongly disagrees with its conclusion that the groundwater contamination originated from another site.

The DTSC believes that the groundwater contamination is a result of Marquardt operations and recommends that Marquardt complete a groundwater investigation, under a DTSC-approved workplan, to determine the full nature and extent (lateral and vertical) of the contamination and its impact to groundwater. Through its Proposition 65 notification, the DTSC is requesting support for its recommendation from other agencies.

4.3 ENFORCEMENT ORDER FOR CORRECTIVE ACTION

On October 5, 1998, the DTSC issued an Enforcement Order for Corrective Action to the Marquardt Company and to Ferranti International, Incorporated to compel the Marquardt Company to comply with DTSC requirements to investigate and remediate the contamination.

A copy of the Enforcement Order for Corrective Action is included in Appendix E.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 FINDINGS

Section 2.0 of this report indicates that the SFB groundwater supply is being properly managed, protected, and remediated in accordance with the regulatory agencies and water purveyors who are all coordinating their efforts. The status of the SFB, the groundwater extractions and recharge, and the water quality of the SFB are carefully and continuously monitored to ensure that this valuable water resource is protected and managed to provide a long-term, reliable, high-quality, and economical water supply.

Section 4.0 of this report indicates that an investigation of Marquardt by the DTSC is still active although the DTSC is having difficulty in gaining compliance by Marquardt to complete the investigation in accordance to an approved workplan that meets DTSC and EPA guidance requirements. The DTSC is indicating that additional investigative work, including a more comprehensive groundwater sampling and analysis plan, is necessary to properly characterize the nature and extent of the contamination at the Marquardt site. The DWP and the other water purveyors are always in strong support of the regulatory agencies to pursue measures to remediate sources of contamination to the SFB to ensure its continued long-term use as a water supply resource.

However, the Marquardt site does not apparently pose an immediate threat to the SFB water supply for Los Angeles or other water purveyors using the SFB supply due to the following considerations:

- The data collected at the Marquardt site, to date, show that the concentrations of contaminants detected in the groundwater samples from the Marquardt site do not appear to be extreme when compared to contaminant concentrations detected at other facilities such as Lockheed-Martin and Weber Aircraft.
- The location of the Marquardt site is a relatively long distance from any existing SFB water supply well.
- The geologic and hydrogeologic characteristics in this location of the SFB are highly restrictive and will tend to retard and minimize contaminant migration from the site.

The contaminant concentrations found at the Marquardt site as compared to the Maximum Contaminant Levels (MCLs), the drinking water standard enforced by the DHS-ODW, are as follows:

<u>Contaminant</u>	<u>Marquardt Site</u>	<u>MCL</u>
1,1 DCE	15-150 ug/L	6 ug/L
PCE	8.8 ug/L	5 ug/L
TCFM	7.8 ug/L	150 ug/L

These contaminant concentrations are not considered extreme when compared to contamination at other source sites such as Lockheed-Martin and Weber Aircraft where TCE and PCE have been detected at concentrations on the order of 1,000 ug/L or greater. In the case of Lockheed-Martin, they have been determined by the EPA to be a PRP and liable for providing financing for the various operable units to remediate the SFB.

The aforementioned considerations of the Marquardt case indicate that there is sufficient time for Marquardt to execute a DTSC-approved remedial action to remove their soil and/or groundwater contamination, protect the water quality of the SFB, and ensure the safety of the water supply for Los Angeles and the other water purveyors.

5.2 RECOMMENDATIONS

- The status of the DTSC investigation of Marquardt will be reported at the ICC meetings until the site is fully remediated.
- A description of the investigative and remedial activities for Marquardt will be summarized in the Watermaster Reports until the site is fully remediated.
- Improved communications with the local elected officials with regard to the activities and investigations in the SFB should be established.
- The Watermaster, who oversees all activities and coordinates with all the aforementioned agencies and water purveyors, is recommended as a "single point of contact" for elected officials to direct their inquiries or to secure general information regarding the SFB.
- The Watermaster Report can be distributed to the Mayor of Los Angeles, members of the Los Angeles City Council and members of the Los Angeles County Board of Supervisors. Copies of the minutes of the ICC, the ICC Subcommittee, and the ULARA Administration would be available upon request to the Watermaster.
- For specific questions regarding investigations or other aspects of the SFB, a list of the appropriate regulatory agencies and water purveyors and their associated representatives is provided in Section 6.0.
- Finally, for Los Angeles to deal with future development or redevelopment of properties such as Marquardt, it is recommended that any application for land use approvals or building permits for properties in the SFV require that the applicant provide full disclosure of any source investigation activities with regard to site contamination. Any discovery of nondisclosure should result in a possible revocation of any permits issued for the subject property.

6.0 LISTING OF AGENCIES AND THEIR REPRESENTATIVES

<u>Agency</u>	<u>Representative</u>	<u>Telephone No.</u>
Watermaster of the Upper Los Angeles River Area 111 North Hope Street, Room 1463 Los Angeles, California 90012	Melvin L. Blevins	(213) 367-1020
Department of Water and Power City of Los Angeles 111 North Hope Street, Room 1455 Los Angeles, California 90012	Gerald A. Gewe	(213) 367-1022
City of Burbank 164 West Magnolia Boulevard P. O. Box 631 Burbank, CA 91503	Fred Lantz	(818) 238-3550
City of Glendale 141 North Glendale Avenue Glendale, CA 91206	Donald R. Froelich	(818) 548-2137
Los Angeles Fire Department 200 North Main Street, Room 930 Los Angeles, CA 90012	Dennis Wilcox	(213) 485-7543
Los Angeles County Department of Public Works 900 South Fremont Avenue, 2 nd Floor Alhambra, CA 91803-1331	Thomas Schriber	(626) 458-6100
Los Angeles County Fire Department Health Hazardous Materials Division 5825 Rickenbacker Road Commerce, California 90040	Thomas W. Klinger	(213) 890-4106
Los Angeles County Department of Health Services Environmental Health Administration 2525 Corporate Place, Room 150 Monterey Park, CA 91754	Arturo Aguirre	(213) 881-4000
California Regional Water Quality Control Board Los Angeles Region 101 Centre Plaza Drive Monterey Park, CA 91754-2156	James Kuykendall	(323) 266-7632
California Department of Toxic Substances Control 1011 North Grandview Avenue Glendale, CA 91202	Hamid Saebfar	(818) 551-2876
California Department of Health Services Office of Drinking Water Drinking Water Field Operations Branch 1449 West Temple Street, Room 202 Los Angeles, California 90026	Vera Melnyk Vecchio	(213) 580-5784

<u>Agency</u>	<u>Representative</u>	<u>Telephone No.</u>
U. S. Environmental Protection Agency Region 9 75 Hawthorne Street (SFD-7-4) San Francisco, California 94105	David A. Seter	(415) 744-2260

APPENDIX A

10/07/98

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXICS SUBSTANCES CONTROL
CALSITES

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SHORT SUMMARY REPORT

R CO SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3 19 G.C. HEWITT COMPANY	174 GLENDALE BLVD.	LOS ANGELES	90026	19510058	REFOA
3 19 M.O.R.E. OIL COMPANY	645 SOUTH AVE. 21	LOS ANGELES	90031	19130103	CERT
3 19 INDUSTRIAL COMPOUNDS	1010 SAN FERNANDO ROAD	LOS ANGELES	90031	19500116	NFA
3 19 VICTOR INDUSTRIAL BATTERY	138 SAN FERNANDO ROAD	LOS ANGELES	90031	19360528	NFA
3 19 JAYBEE SITE AT LINCOLN HEIGHTS - LA DWP	301 WEST AVENUE 26	LOS ANGELES	90031	19490238	PEAR
3 19 BARON MANUFACTURING	241 AVENUE 26	LOS ANGELES	90031	19330366	REFOA
3 19 EMPIRE CHEMICAL COMPANY	715 LAMAR STREET	LOS ANGELES	90031	19281206	REFOA
3 19 KENNINGTON	3209 HUMBOLDT STREET	LOS ANGELES	90031	19340739	VCOMP
3 19 BRAY OIL/BURMAH CASTROL, INC.	1925 NORTH MARIANNA AVENUE	LOS ANGELES	90032	19290275	DLIST
3 19 SOUTHERN PACIFIC - TAYLOR YARD/ACTIVE	2800 KERR STREET	LOS ANGELES	90039	19470006	AWP
3 19 WILSHIRE PROPERTIES	4685 SAN FERNANDO ROAD WEST	LOS ANGELES	90039	19380058	CERT
3 19 FRANCISCAN CERAMICS, INC.	2901 LOS FELIZ BOULEVARD	LOS ANGELES	90039	19320112	COMM
3 19 CAIN ROOFING COMPANY	2924 ALLESANDRO STREET	LOS ANGELES	90039	19290272	NFA
3 19 J F COCHRAN	3109 CASITAS AVENUE	LOS ANGELES	90039	19281174	NFA
3 19 MCBRIDE CHEMICAL COMPANY	4215 WILLIMET STREET	LOS ANGELES	90039	19280632	NFA
3 19 GARRETT, NEAL	3941 GOODWIN AVENUE	LOS ANGELES	90039	19320168	PEAR
3 19 CENTRALAB	4561 COLORADO BOULEVARD	LOS ANGELES	90039	19360522	REFRW
3 19 PACIFIC AIRMOTIVE	3417 ANGELES MESA DRIVE, ROGER AIRPORT	LOS ANGELES	90042	19760011	NFA
3 19 SANTA FE/ARROYO SECO BRIDGE	PASADENA FWY BRIDGE SO. OF BERTHA/AVE 63	LOS ANGELES	90042	19400007	NFA
3 19 TABERY CORPORATION	2424 SAN FERNANDO ROAD	LOS ANGELES	90065	19500129	NFA
3 19 PROFILE PLASTICS	2130 SAN FERNANDO ROAD	LOS ANGELES	90065	19300239	PEAR
3 19 METRO RAIL PASADENA BLUE LINE	BETWEEN AVENUE 33 & FRENCH AVENUE	LOS ANGELES	90065	19990014	PEAR

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 22

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CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXICS SUBSTANCES CONTROL
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SHORT SUMMARY REPORT

R CO SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3 19 GLENDALE PUBLIC SERVICES DEPARTMENT	800 AIR WAY	GLENDALE	91201	19490185	REFOA
3 19 BAKER HUGHES, INC.	640 PAULA AVENUE	GLENDALE	91201	19340766	REFRW
3 19 PACIFIC AIRMOTIVE	6265 SAN FERNANDO ROAD	GLENDALE	91201	19760012	REFRW
3 19 AIR PRODUCTS & CHEMICALS INC	6505 SAN FERNANDO ROAD	GLENDALE	91202	19281065	NFA
3 19 PACIFIC AIRMOTIVE	926 SOUTH BRAND BLVD	GLENDALE	91202	19760014	REFOA
3 19 KEN'S BROACHING	702 WEST BROADWAY	GLENDALE	91204	19350447	NFA
3 19 DRILUBE COMPANY	723 WEST BROADWAY	GLENDALE	91204	19290258	REFRW

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 7

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CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
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R	CO	SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3	19	WEST VALLEY HOSPITAL	22141 ROSCOE BOULEVARD	CANOGA PARK	91304	19800031	NA
3	19	HUGHES AIRCRAFT COMPANY	8433 FALLBROOK AVENUE	CANOGA PARK	91304	19360344	NA
3	19	ROCKWELL INTERNATIONAL; ROCKETDYNE DIV.	6633 CANOGA AVENUE	CANOGA PARK	91304	19370329	NA
3	19	EL PROYECTO DEL BARRIO-CANOGA PARK CLINI	20800 SHERMAN WAY	CANOGA PARK	91306	19800030	NA
3	19	PARK METAL	21608 NORDHOFF	CHATSWORTH	91311	19340767	CERT
3	19	CHEF AMERICA	9601 CANOGA AVENUE	CHATSWORTH	91311	19360300	NEA
3	19	COMMERCIAL RECOVERY	8933 WINNETKA AVENUE	CHATSWORTH	91311	19360508	NEA
3	19	ULTRA CIRCUITS INC	20751 MARILLA STREET	CHATSWORTH	91311	19360482	VCOMP
3	19	NMB/NEW HAMPSHIRE BALL BEARING	9730 INDEPENDENCE AVENUE	CHATSWORTH	91311	19380059	VCP
3	19	VOI-SHAN/CHATSWORTH	9631 DE SOTO AVENUE	CHATSWORTH	91311	19340764	VCP
3	19	HOLCHEM, INC.	13546 DESMOND STREET	PACOIMA	91331	19281213	AWP
3	19	EL PROYECTO DEL BARRIO	10518 ONEIDA AVENUE	PACOIMA	91331	19800029	NA
3	19	D & M STEEL	11035 SUTTER AVENUE	PACOIMA	91331	19340769	PEAP
3	19	PRICE PFISTER	13500 PAXTON ST.	PACOIMA	91331	19340768	PEAP

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 14

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SHORT SUMMARY REPORT

R	CO	SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3	19	SAN FERNANDO ELECTRIC	1501 FIRST STREET	SAN FERNANDO	91340	19360532	NEPA
3	19	TRUESDALE CENTER - LA DWP	11791 TRUESDALE CENTER	SUN VALLEY	91352	19490236	PEAR
3	19	VALLEY GENERATING STATION - DWP	9430 SAN FERNANDO ROAD	SUN VALLEY	91352	19490237	PEAR
3	19	PENROSE SANITARY LANDFILL	8301 TUJUNGA AVENUE	SUN VALLEY	91352	19490188	PEAR
3	19	EXXON COMPANY, U.S.A.	21501 VENTURA BLVD.	WOODLAND HILLS	91367	19750083	PEAR

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 5

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SHORT SUMMARY REPORT

R	CO	SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3	19	NESTLE/VAN NUYS	8015 VAN NUYS BLVD.	VAN NUYS	91402	19200020	NEFA
3	19	THOMSON ELECTROPLATING	13900 SATICOY STREET	VAN NUYS	91402	19340727	REFOA
3	19	CONSOLIDATED FABRICATORS, INC	14620 ARMINTA STREET	VAN NUYS	91402	19340510	REFOA
3	19	GENERAL MOTORS CORP - GM ASSEMBLY DIV	8000 VAN NUYS BLVD	VAN NUYS	91402	19370180	REFOA
3	19	SAN FERNANDO VALY COM. MENTAL HEALTH CTR	14535-14545 SHERMAN CIR;14550 SHERMAN WA	VAN NUYS	91405	19800036	REFOA
3	19	AUTO HEAVEN DISMANTLING	14546 RAYMER STREET	VAN NUYS	91405	19750067	REFOA
3	19	FLAME-X CONTROL CORPORATION	14810-18 RAYMER STREET	VAN NUYS	91405	19280579	REFOA
3	19	OCCIDENTAL COATING COMPANY	14533 KESWICK STREET	VAN NUYS	91405	19330163	REFOA
4	19	VAN NUYS AMSA 32	6357 WOODLEY	VAN NUYS	91406	19970019	AWP
3	19	HEALTH CARE CHILDREN'S CAMPUS	15339 SATICOY STREET	VAN NUYS	91406	19830004	REFOA
3	19	ANHEUSER-BUSCH INC	15800 ROSCOE BOULEVARD	VAN NUYS	91406	19200005	REFOA
3	19	MARQUARDT CORPORATION, THE	16555 SATICOY	VAN NUYS	91406	19370176	REFOA
3	19	DATAPRODUCTS CORPORATION	16300 STAGG STREET	VAN NUYS	91406	19360525	REFOA
4	19	SEPULVEDA AIR NATIONAL GUARD	15900 VICTORY BLVD.	VAN NUYS	91406	19970013	REFOA
3	19	REX PRECISION PRODUCTS INC	14806 OXNARD STREET	VAN NUYS	91411	19360219	REFOA

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 15

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SHORT SUMMARY REPORT

R CO SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3 19 FIBER RESIN CORP MICHIGAN	170 W. PROVIDENCIA AVENUE	BURBANK	91502	19280578	NFA*
3 19 CIRCUIT CRAFT COMPANY	205 SOUTH FLOWER STREET	BURBANK	91502	19360483	REFOA
3 19 PACIFIC AIRMOTIVE	217 SOUTH FRONT STREET	BURBANK	91502	19760013	REFOA
3 19 RAIL CHEMICAL DIVISION	201 FRONT STREET	BURBANK	91502	19281146	REFOA
3 19 HASKEL INC	100 EAST GRAHAM PLACE	BURBANK	91502	19500174	REFOA
3 19 HUGHEY & PHILLIPS INC	3050 CALIFORNIA STREET	BURBANK	91504	19360474	NFA*
3 19 WESTERN PACIFIC CIRCUITS	2033 NORTH LINCOLN	BURBANK	91504	19360520	REFOA
3 19 BRASS PRODUCTION COMPANY	3059-3063 NORTH CALIFORNIA STREET	BURBANK	91505	19330317	NFA*
3 19 PAC AIRCRAFT ENGINEERING CENTER	3000 CLYBOURN AVENUE	BURBANK	91505	19760010	NFA*
3 19 LOCKHEED AIR TERMINAL	2627 NORTH HOLLYWOOD WAY	BURBANK	91505	19450006	REFOA
3 19 LOCKHEED AIRCRAFT CORPORATION	2555 NORTH HOLLYWOOD WAY	BURBANK	91505	19370189	REFOA
3 19 PACIFIC AIRMOTIVE	2940 NORTH HOLLYWOOD WAY	BURBANK	91505	19340723	REFOA

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 12

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CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
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R	CO	SITE NAME	SITE ADDRESS	SITE CITY	ZIP CODE	IDNUM	STATUS
3	19	SAN FERNANDO VALLEY (AREA 1)	NORTH HOLLYWOOD WELLFIELD AREA	LOS ANGELES	91601	19990011	AWP
3	19	SOUTHERN PACIFIC HOPE PLASTICS	5353 STROHM AVENUE	NORTH HOLLYWOOD	91601	19360111	SEPT 6
3	19	MAIN TOOL & DIE COMPANY	10835 CHANDLER BOULEVARD	NORTH HOLLYWOOD	91601	19350385	NEA*
3	19	LBM PRODUCTS	10711 CHANDLER BOULEVARD	NORTH HOLLYWOOD	91601	19350164	REFOA
3	19	NORTH HOLLYWOOD SUPERIOR COURT	5554-68 LANKERSHIM BOULEVARD	NORTH HOLLYWOOD	91601	19750073	REFOA
3	19	NICKEL SOLUTION RECYCLING INC.	11940 SHERMAN ROAD	NORTH HOLLYWOOD	91605	19290292	REFOA
3	19	PACIFIC AIRMOTIVE	6853 LANKERSHIM BLVD	NORTH HOLLYWOOD	91605	19420025	REFOA
3	19	PACIFIC AIRMOTIVE	6909 LANKERSHIM BLVD	NORTH HOLLYWOOD	91605	19420026	REFOA
3	19	SPECIALTY COATING & CHEMICALS INC	7360 VARNA AVENUE	NORTH HOLLYWOOD	91605	19280042	REFOA
3	19	THE H.E.L.P. GROUP	6421 - 55 COLDWATER CANYON AVENUE	NORTH HOLLYWOOD	91606	19830001	REFOA

TOTAL NUMBER OF RECORDS FOR THIS REPORT = 10

SOUTHERN CALIFORNIA PERMITTING BRANCH
HW FACILITIES LOCATED IN SAN FERNANDO VALLEY AREA

DATE 10/21/98

EPA ID		FACILITY NAME		FACILITY ADDRESS	
CAD009561911		ALUMTREAT INC		2905 WINONA, BURBANK, CA 91504	
CAD051481349		AMBITECH INC		8944 FULLBRIGHT AVE., CHATSWORTH, CA 91311	
CAD093365435		BOEING N AMERICAN INC ROC DIV SSFL AREAS 1 3		END OF WOOLSEY CANYON, SIMI HILLS, CA 91311	
CA1800090010		BOEING N AMERICAN INC ROC DIV SSFL LAB NASA AREA 2		END OF WOOLSEY CANYON, SIMI HILLS, CA 91311	
CAD000629972		BOEING N AMERICAN, INC ETEC IWMF AREA 4		END OF WOOLSEY CANYON, SIMI HILLS, CA 91311	
CA3890090001		BOEING N. AMERICAN INC ETEC RMH		TOP OF WOOLSEY CANYON RD. RMHF, SIMI HILLS, CA	
CAD075275180		BURBANK TRANSIT CTR (RAILCHEM)		201 N. FRONT ST., BURBANK, CA 91502	
CAD000838872		CRANE DIVISION OF HYDRO AIRE CO		3000 WINONA AVENUE, BURBANK, CA 91501	
CAD062062435		CROWN CORK AND SEAL COMPANY INC		8201 WOODLEY, VAN NUYS, CA 91406	
CAL000013493		GRAPHIC RECYCLING FACILITY (STANDARDIZED PERMIT FACILITY)		7331 FULTON AVENUE, NORTH HOLLYWOOD, CA 91605	
CAD041162124		HUGHES AIRCRAFT COMPANY		8433 FALLBROOK AVE., CANOGA PARK, CA 91304	
CAD045257187		LOCKHEED MARTIN CORP.		1705 VICTORY PLACE, BURBANK, CA 91520	
CAD980737571		LOS ANGELES DEPT. OF WATER & POWER (STANDARDIZED PERMIT)		6000 VAN NUYS BLVD. VAN NUYS, CA 91401	
CAD044696102		MARQUARDT COMPANY THE		16555 SATICOY ST., VAN NUYS, CA 91409	
CAL000051064		MERRY X-RAY CHEM CORP. GLENDALE (STANDARDIZED		340 MIRA LOMA AVENUE, GLENDALE, CA 91204	

SOUTHERN CALIFORNIA PERMITTING BRANCH
HW FACILITIES LOCATED IN SAN FERNANDO VALLEY AREA

DATE 10/21/98

EPA ID#	FACILITY NAME	FACILITY ADDRESS
PERMIT)		

CAL000024110

P. KAY METAL SUPPLY FACILITY (STANDARDIZED PERMIT)

2448 EAST 25TH STREET, LOS ANGELES, CA 90058

CAD981685472

PETE'S METAL RECLAMATION

11784 SHELDON ST., #4, SUN VALLEY, CA 91352

CAT000613935

SAFETY KLEEN CORP, LOS ANGELES

2918 WHORTHERN AVE., LOS ANGELES, CA 90039

APPENDIX B

Well Investigation Program Active Case List
Regional Water Quality Control Board-Los Angeles Region
Oct-98

Facility Name	Street No.	Street Name	City	Zip Code	VOCs Removed (lbs)		Status
					Water	Soil	
Burbank Steel Treating	415	S. VARNEY ST.	BURBANK	91502-			A
City of Burbank PSD	164	W. MAGNOLIA BLVD.	BURBANK	91502-			C
Commercial Inspection Service	156	W. PROVIDENCIA AVE.	BURBANK	91502-			C
Crane Company	3000	WINONA AVE.	BURBANK	91504-			C
Disney Studios	500	W. BUENA VISTA ST.	BURBANK	91505			C
Former Menasco	26	W. PROVIDENCIA AVE.	BURBANK	91502-			C
Former Weber Aircraft	2820	ONTARIO ST.	BURBANK	91504-			C
Hyrail	415	FRONT ST.	BURBANK	91502-			A
Interstate Brands Corp	10	E. LINDEN AVE.	BURBANK	91502-			A
ITT Aerospace Controls	1200	S. FLOWER ST.	BURBANK	91502-			C
Kahr Bearing Fac.	3010	N. SAN FERNANDO BLVD.	BURBANK	91504-		1,649	C
Lockheed Martin Bldg 371	2960	N. HOLLYWOOD WAY	BURBANK	91505			A
Lockheed Martin Bldg 90	3110	W. THORNTON AVE.	BURBANK	91505		3,626	C
Lockheed Martin Plant A-1 North	2555	N. HOLLYWOOD WAY	BURBANK	91505			A
Lockheed Martin Plant B-1	1705	VICTORY PLACE	BURBANK	91520-	7,040	144,865	C
Lockheed Martin Plant B-5	4207	EMPIRE AVENUE	BURBANK	91352-			A
Pacific Airmotive	2940	N. HOLLYWOOD WAY	BURBANK	91504-			C
PMI Prop-Masters	912	ISABEL ST.	BURBANK	91506-			A
Stainless Steel Property	2980	N. SAN FERNANDO BLVD.	BURBANK	91504-		390	C
VORELCO Facility	825	N. VICTORY BLVD.	BURBANK	91502-			A
Zero Corp	777	FRONT ST.	BURBANK	91502-			C
Adams Rite Sabre International	540	W. CHEVY CHASE	GLENDALE	91204-		16	C
Brock Bus Lines	722	W. WILSON AVE.	GLENDALE	91203-			C
Courtaulds	5430	SAN FERNANDO RD.	GLENDALE	91209-			C
Interstate Brands Corp	6801	SAN FERNANDO RD.	GLENDALE	91201-			A
Ken's Broaching	747	SALEM ST.	GLENDALE	91203-			A
Standard Armament	631	ALLEN AVE.	GLENDALE	91201-			C
The Drilube Company	711	W. BROADWAY	GLENDALE	91204-			C
A.G. Layne	4578	BRAZIL ST.	LOS ANGELES	90039-			C
Allesandro Automatic	2954	ALLESANDRO	LOS ANGELES	90039-			A
Allesandro Automatic	3017	N. COOLAGE AVE.	LOS ANGELES	90039			A
City of LA Parks and Recreation	3900	W.CHEVY CHASE DR.	LOS ANGELES	90039-			C
Former Mayco Pump	4640	SPERRY ST.	LOS ANGELES	90039-			C
Hawkes	4626	BRAZIL ST.	LOS ANGELES	90039-			A
Hurst Graphics	2500	SAN FERNANDO RD.	LOS ANGELES	90065-			A
One Stop Paint and Body Ctr	3311	SAN FERNANDO RD.	LOS ANGELES	90065-			A
Safety Kleen	2918	N. WORTHEN AVE	LOS ANGELES	90039-			A
Kaiser Permanente	11666	SHERMAN WAY	N. HOLLYWOOD	91605			A
Allied Signal Fac.	11600	SHERMAN WAY	NORTH HOLLYWOOD	91605-			A
Custom Wheel Refinishing	6868	LANKERSHIM BLVD.	NORTH HOLLYWOOD	91605-			A
Fleetwood Machine	11447	VANOWEN ST.	NORTH HOLLYWOOD	91605-			A
Kleanette Cleaners	6240	N. VANTAGE AVE	NORTH HOLLYWOOD	91606-			A
Pacific Steel Treating	6829	FARMDALE AVE.	NORTH HOLLYWOOD	91605-		1,228	C
Holchem Industries	13546	DESMOND ST.	PACOIMA	91331			C
Price Pfister	13500	PAXTON ST.	PACOIMA	91331	2,855 gal. (fuel)		C
Burbank Operable Unit					67,756		C

A = Assessment
C = Cleanup
VOC = Volatile Organic Compounds

Spills, Leaks, Investigations and Cleanup (SLIC) Active Case List
San Fernando Basin
Regional Water Quality Control Board-Los Angeles Region
Oct-98

SITE NAME	STREET NO.	STREET NAME	STREETDES	CITY	ZIP CODE	SUBSTANCE	STATUS
CREST CLEANERS	22323	SHERMAN	WAY	CANOGA PARK		VOCs	2
HUGHES MISSILE SYSTEMS	8433	FALLBROOK	AVENUE	CANOGA PARK		VOCs	2
MONTGOMERY WARD AUTO SERVICE CTR.	6601	OWENSMOUTH	AVENUE	CANOGA PARK		TPH	2
RENTEC DIVISION	7647	ALABAMA	STREET	CANOGA PARK		Metal	1
ROCKETDYNE DIVISION	8900	DESOTO	AVENUE	CANOGA PARK		VOCs	1
ROCKWELL - CATALINA YACHTS	21200	VICTORY	BOULEVARD	CANOGA PARK		VOCs	1
ROCKWELL INTERNATIONAL CORP.	6633	CANOGA	AVENUE	CANOGA PARK	91309	TPH/VOCs	2
SHOUP CLEANERS	22330	SHERMAN	WAY	CANOGA PARK	91303	VOCs	2
GRAPHIC RESEARCH INC.	9334	MASON	AVENUE	CHATSWORTH		VOCs	1
ITT NEODYNE	21411	PRAIRIE	STREET	CHATSWORTH		VOCs	1
PARKER INDUSTRIAL PROPERTIES	9000	FULLBRIGHT	AVENUE	CHATSWORTH		VOCs	1
MOBIL GAS STATION	4954	YORK	BOULEVARD	HIGHLAND PARK		TPH	2
BAXTER HEALTHCARE CORP.	4501	COLORADO	BOULEVARD	LOS ANGELES			
CANNON ELECTRICAL	3209	HUMBOLT	AVENUE	LOS ANGELES		TPH/VOC/Me	
CITY OF LOS ANGELES - MAINT. YARD	3311	THATCHER	AVENUE	LOS ANGELES		TPH	1
FRANCISCAN CERAMICS	2901	LOS FELIZ	BOULEVARD	LOS ANGELES	90039	TPH	
LAWRY'S CHROMAL SITE	568	SAN FERNANDO	ROAD	LOS ANGELES		Metals	1
LAWRY'S MATTHEW SITE	570	28	AVENUE	LOS ANGELES		VOCs	2
MOBIL OIL CORP.	774	BROADWAY	AVENUE	LOS ANGELES		TPH/BTEX	1
NELOWE PROPERTIES	3370-3550	SAN FERNANDO	ROAD	LOS ANGELES		TPH/VOCs	1
SIEROTY COMPANY, INC.	9525	DESOTO AVENUE	AVENUE	LOS ANGELES		VOCs	1
UNOCAL CENTER ST. TERMINAL	501	CENTER	STREET	LOS ANGELES			1
VENTURA TAMPA PLAZA	19307	VENTURA	BOULEVARD	LOS ANGELES		TPH	1
3M PHARMACEUTICALS	19901	NORDHOFF	STREET	NORTHBRIDGE		VOCs	2
HENDERSON PROPERTY	8714 -8716	DARBY	AVENUE	NORTHBRIDGE			1
MICRO MATIC USA	19791	BAHAMA	STREET	NORTHBRIDGE	91324	VOCs	1
FORTIN INDUSTRIES #610	9880	SAN FERNANDO	ROAD	PACOIMA		Metals	
PARAGON PRECISION PRODUCTS	11035	SUTTER	AVENUE	PACOIMA		TPH/VOCs	
LOEHMANN'S PLAZA	19333	VICTORY	BOULEVARD	RESEDA		VOCs	1
RESEDA PROPERTIES GROUP	7027	CANBY	AVENUE	RESEDA			
CHEVRON - VAN NUYS TERMINAL	15359	OXNARD	STREET	VAN NUYS	91401		1
DOD - SEPULVEDA ANG	15980	VICTORY	BOULEVARD	VAN NUYS			1
LITTON DATA PRODUCTS	15901	STRATHERN	STREET	VAN NUYS			2
LITTON GUIDANCE SYSTEM	8000	WOODLEY	ROAD	VAN NUYS		VOCs	1
MARQUARDT CO.	26555	SATICOY	STREET	VAN NUYS		TPH	
CURRAN DRY CLEANERS	22082	VENTURA	BOULEVARD	WOODLAND HILLS	91364	VOCs	1
FLAIR CLEANERS	23383	MULHOLLAND	DRIVE	WOODLAND HILLS		VOCs	2
LITTON GUIDANCE & CONTROL SYSTEMS	5500	CANOGA	AVENUE	WOODLAND HILLS	91367	VOCs	3
UNOCAL STATION #4682	23706	VICTORY	BOULEVARD	WOODLAND HILLS		VOCs	1

Note:
1 = site assessment
2 = cleanup
3 = post cleanup monitoring

Underground Storage Tank Active Case List
San Fernando Basin
Regional Water Quality Control Board-Los Angeles Region
October 1998

Site Name	Street No.	Street Name	City	Zip Code	Status
76 PRODUCTS STATION #5662	13235	OSBORNE AVE	ARLETA-PACOIMA	91331	1
EXXON #7-3655	13310	OSBORNE ST	ARLETA-PACOIMA	91331	1
FORTIN INDUSTRIES INC	9880	SAN FERNANDO RD	ARLETA-PACOIMA	91331	5C
HOLCHEM	13546	DESMOND ST	ARLETA-PACOIMA	91331	5C
MOBIL #11-G9K	9115	WOODMAN AVE	ARLETA-PACOIMA	91331	5C
PACOIMA COMPANY	13461	VAN NUYS BLVD	ARLETA-PACOIMA	91331	1
PRICE PFISTER INC	13500	PAXTON ST	ARLETA-PACOIMA	91331	5C
SHELL OIL PRODUCTS CO	10685	LAUREL CANYON	ARLETA-PACOIMA	91331	7
THRIFTY #230	12957	VAN NUYS BLVD	ARLETA-PACOIMA	91331	3A
UNOCAL #5704	13812	VAN NUYS BLVD	ARLETA-PACOIMA	91331	5C
UNOCAL #6987	14200	VAN NUYS BLVD N	ARLETA-PACOIMA	91331	5C
A G LAYNE INC.	4578	BRAZIL ST	ATWATER VILLAGE	90039	3B
CENTRALAB (PHILIPS COMPONENTS)	4561	COLORADO BLVD	ATWATER VILLAGE	90039	5C
CHEVRON #9-5108	11113	SAN FERNANDO RD	ATWATER VILLAGE	90039	5C
KATZENBACH AND WARREN PROPERTY	4000	CHEVY CHASE DR	ATWATER VILLAGE	90039	3B
MOBIL	2656	HYPERION AVE	ATWATER VILLAGE	90039	5C
TRIANGLE GAS STATION	2918	RIVERSIDE DR	ATWATER VILLAGE	90039	1
ARCO #5039	201	ALAMEDA AVE W	BURBANK	91502	3B
AVIBANK MFG., INC.	210	VICTORY BLVD S	BURBANK	91503	0
BURBANK ENVIRONMENTAL CENTER	500	FLOWER ST S	BURBANK	91502	8
BURBANK PUBLIC SERVICE DEPT.	164	MAGNOLIA BLVD W	BURBANK	91503	5C
BURBANK STEEL TREATING INC	415	VARNEY ST S	BURBANK	91502	3B
CHEVRON #9-5538	923	VICTORY BLVD N	BURBANK	91502	0
CHEVRON #9-610	3610	BURBANK BLVD	BURBANK	91505	5C
CONTINENTAL-HAGEN FACILITY	005	OLIVE ST W	BURBANK	91502	5C
CRANE COMPANY	3000	WINONA AVE	BURBANK	91504	7
HAMOUI MOBIL	349	GLENOAKS BLVD S	BURBANK	91502	3B
JOHN'S MOBIL	2501	MAGNOLIA AVE W	BURBANK	91505	0
MENASCO AEROSYSTEM DIVISION	100	CEDAR AVE E	BURBANK	91519	5C
MERCURY AIR SERVICES	4331	EMPIRE AVE	BURBANK	92397	1
MOBIL #11-FD3	1951	HOLLYWOOD WY N	BURBANK	91505	5C
MOBIL #11-FX4	2005	GLENOAKS BLVD N	BURBANK	91504	5C
MOBIL #17-LYY	141	ALAMEDA AVE E	BURBANK	91502	0
NBC-FIELD SHOP	3000	ALAMEDA AVE W	BURBANK	91523	1
PACIFIC AIRMOTIVE CORPORATION	2940	HOLLYWOOD WY N	BURBANK	91505	5C
QUEEN CITY SHELL INC.	2801	SAN FERNANDO BLVD N	BURBANK	91504	5C
SEVEN GAS	1638	SAN FERNANDO RD N	BURBANK	91504	3B
SHELL	140	ALAMEDA AVE E	BURBANK	91502	0
SHELL	181	ALAMEDA AVE W	BURBANK	91502	3B
SHELL (FORMER)	2421	VICTORY BLVD W	BURBANK	91506	5C
SUN BANK	3110	WINONA AVE	BURBANK	91504	0
TEXACO	2616	GLENOAKS BLVD N	BURBANK	91504	3B
TEXACO FOOD MART #0251	400	VICTORY BLVD N	BURBANK	91502	7
TEXON SERVICE CENTER	249	GLENOAKS BLVD S	BURBANK	91501	3A
UN-NAMED	2501	OLIVE AVE	BURBANK	91504	5R
UNOCAL #4188	2128	GLENOAKS BLVD N	BURBANK	91504	3A
WEBER AIRCRAFT	2820	ONTARIO ST	BURBANK	91504	5R
WORLD OIL #25	2417	SAN FERNANDO BLVD N	BURBANK	91504	5C
76 PRODUCTS STATION #4648	22801	VANOWEN ST	CANOGA PARK	91307	3A
ARCO	21935	ROSCOE BLVD	CANOGA PARK	91304	8
BOB SMITH BMW	7050	TOPANGA CANYON BL	CANOGA PARK	91303	5R
CANOGA PARK CAR WASH	21004	SHERMAN WY	CANOGA PARK	91304	3A
CHEVRON #9-3113	7607	WOODLAKE DR	CANOGA PARK	91304	5C
CLARA SMITH	8475	CANOGA AVE	CANOGA PARK	91304	0
HUGHES AIRCRAFT	8433	FALLBROOK AVE	CANOGA PARK	91304	7
MONTGOMERY WARDS AUTO SVC CTR	6601	OWENSMOUTH AVE	CANOGA PARK	91303	5C
RAYNE WATER OF THE VALLEY	6953	CANOGA AVE	CANOGA PARK	91303	5C
SALVATION ARMY	21375	ROSCOE BLVD	CANOGA PARK	91304	5C
THRIFTY #142	20055	VANOWEN ST	CANOGA PARK	91306	5C
THRIFTY OIL CO #223	8255	WINNETKA AVE	CANOGA PARK	91306	1
VANOWEN/FALLBROOK SHELL	22761	VANOWEN	CANOGA PARK	91304	0
WINALL #16	21403	SATICOY ST	CANOGA PARK	91304	5C
ARCO #1880	4380	EAGLE ROCK RD	EAGLE ROCK	90041	5R
EAGLE ROCK/WILSHIRE YARD 8/8-1	2231	FAIR PARK AVE	EAGLE ROCK	90041	5R
MOBIL #17-L2F	2207	COLORADO BLVD	EAGLE ROCK	90041	0
SHELL (FORMER EXXON #7-2093	2200	COLORADO BLVD	EAGLE ROCK	90041	7
ARCO #5054	2106	TEMPLE ST W	ECHO PARK	90026	5C
EXXON #7-8422	330	ALVARADO ST N	ECHO PARK	90026	3B
SHELL #204-4532-0607	400	ALVARADO ST N	ECHO PARK	90026	5C
STANMOR ENTERPRISES	1700	SUNSET BLVD	ECHO PARK	90026	1
SUNSET CARWASH	2028	SUNSET BLVD	ECHO PARK	90026	3B

Site Name	Street No.	Street Name	City	Zip Code	Status
W. SERVICE	1016	ALVARADO ST N	ECHO PARK	90026	5C
CHEVRON #9-3187	18081	VENTURA BLVD	ENCINO	91316	3B
EXXON #7-3612	17661	VENTURA BLVD	ENCINO	91316	5C
GROSS ENTERPRISES	16501	VENTURA BLVD	ENCINO	91436	7
SAN VINCENTE MOUNTAIN PARK	17500	MULHOLLAND DR.	ENCINO	91316	1
SHELL OIL CO	17660	BURBANK BLVD	ENCINO	91316	0
UNOCAL #6132	17849	VENTURA BLVD	ENCINO	91316	1
US POSTAL SERVICE	5823	WHITE OAK AVE	ENCINO	91316	5C
500 NORTH BRAND PARTNERSHIP	550	BRAND BLVD N	GLENDALE	91202	0
76 PRODUCTS STATION #2175	901	CENTRAL AVE N	GLENDALE	91203	1
ACC	458	GLENOAKS ST W	GLENDALE	91202	0
ACE SANDBLASTING CO	530	GARFIELD AVE W	GLENDALE	91204	5R
AIR CONDITIONING COMPANY	6265	SAN FERNANDO RD	GLENDALE	91201	3B
ANDY'S TRANSFER	3464	VERDUGO RD N	GLENDALE	91208	3B
ARCO #0051	3941	SAN FERNANDO RD	GLENDALE	91204	5C
ARCO #3070	144	VERDUGO RD N	GLENDALE	91205	5C
EXXON #7-3523	2817	HONOLULU AVE	GLENDALE	91214	3B
EXXON #7-3678	825	CENTRAL ST N	GLENDALE	91201	3B
FIRE STATION #28	440	NEW YORK AVE	GLENDALE	91214	0
FUELING STATION BROCK BUS LINE	722	WILSON AVE W	GLENDALE	91203	7
G.A.M.C. REHAB	311	VALLEJO DR	GLENDALE	91206	0
GAS S/S -VACANT	525	GLENDALE AVE N	GLENDALE	91206	3A
GAY'S AUTOMOTIVE & TOWING	418	GLENOAKS BLVD E	GLENDALE	91207	0
GLENDALE ADVENTIST MED. CTR	1509	WILSON TER	GLENDALE	91206	5C
GLENDALE BUILDERS SUPPLY	4415	SAN FERNANDO RD	GLENDALE	91204	3B
GRAYSON POWER PLANT	800	AIR WY	GLENDALE	91201	5C
INTERNATIONAL PROTEINS CORP	815	THOMPSON AVE	GLENDALE	91201	0
INTERSTATE BRANDS CORPORATION	6841	SAN FERNANDO RD	GLENDALE	91201	5R
MOBIL #11-816	301	VERDUGO AVE S	GLENDALE	91205	1
MOBIL #11-GGL	900	GLENOAKS ST W	GLENDALE	91202	5C
MOBIL #11-GHW	250	GLENDALE AVE S	GLENDALE	91205	5C
MOBIL #11-JPL	3200	FOOTHILL BLVD	GLENDALE	91214	3B
MOBIL #11-K2H	1028	BRAND BLVD S	GLENDALE	91205	1
MOBIL #11-KNL	800	PACIFIC AVE N	GLENDALE	91203	5C
MOBIL #14-623/ #18-KRF	700	GLENDALE AVE N	GLENDALE	91206	5C
MONTEREY TOW	915	AIR WY	GLENDALE	91205	7
PRODUCTS RESEARCH & CHEM CO	5430	SAN FERNANDO RD	GLENDALE	91203	0
SHELL	350	GLENDALE AVE N	GLENDALE	91204	1
SHELL	625	PACIFIC AVE	GLENDALE	91203	0
TEXACO	401	GLENDALE AVE N	GLENDALE	91206	3B
THRIFTY #013	3680	SAN FERNANDO RD	GLENDALE	91200	5C
UNOCAL #0521	367	CHEVY CHASE DR N	GLENDALE	91208	3B
76 PRODUCTS STATION #4540	11062	BALBOA BLVD	GRANADA HILLS	91344	1
SHELL (FORMER LEE'S)	11920	BALBOA BLVD	GRANADA HILLS	91344	6
ABF INCORPORATED (BODY SHOP)	20256	SATICOY ST	LOS ANGELES	91306	3A
ALAMEDA MANAGEMENT #520	11155	BALBOA BLVD	LOS ANGELES	91344	1
ARCO #1003	14856	MAGNOLIA BLVD	LOS ANGELES	91403	1
ARCO #1959	12050	ROSCOE BLVD	LOS ANGELES	91605	3B
ARCO #5200	8004	LANKERSHIM BLVD	LOS ANGELES	91605	0
AUTOMOTIVE REPAIR	1901	ECHO PARK AVE N	LOS ANGELES	90026	0
BENDIX CORP/ALLIED SIGNAL	11600	SHERMAN WY	LOS ANGELES	91605	5R
BEVERLY HILLS TRANSFER CO	15701	VENTURA BLVD	LOS ANGELES	91436	5C
CALMAT FACILITY	7001	DEERING AVE	LOS ANGELES	91303	5C
CANOGA PARK DIST. ST. MAINT.YD	7453	CANOGA AVE.	LOS ANGELES	91303	1
CANOGA PARK DISTRIBUTION HQ	17507	CANOGA AVE	LOS ANGELES	91303	3B
CAREY WEHRLI	15540	RINALDI ST	LOS ANGELES	91344	3B
CHEVRON #9-202034	11000	VICTORY BLVD	LOS ANGELES	91609	3B
CHEVRON #9-2683	11335	MAGNOLIA BLVD	LOS ANGELES	91601	5C
CHEVRON #9-3236	20860	SHERMAN WY	LOS ANGELES	91306	5C
CHEVRON #9-3707	2601	FIGUEROA ST N	LOS ANGELES	90065	3B
DIVISION 3	630	WEST AVE	LOS ANGELES	90065	3B
EXXON	7215	CANOGA AVE	LOS ANGELES	91404	5C
EXXON #7-3122	8230	TOPANGA CANYON BLVD	LOS ANGELES	91303	5C
HUGHES MARKETS INC	2716	SAN FERNANDO RD	LOS ANGELES	90065	0
HURST GRAPHICS	2500	SAN FERNANDO RD	LOS ANGELES	90065	5C
HYE CENTER MARKET	7543	TAMPA AVE	LOS ANGELES	91335	3A
KLEERPAK MANUFACTURING	13051	SATICOY ST	LOS ANGELES	91605	5C
LAC MTA DIVISION 3, CYPRESS PK	630	AVENUE 28 W	LOS ANGELES	90065	5C
LAWRY'S CALIFORNIA CENTER	570	AVENUE 26 W	LOS ANGELES	90065	7
MCBRIDE CHEMICAL	4215	WILLIMET AVE	LOS ANGELES	90039	0
MOBIL #11-FRN (FORMER)	16461	VENTURA BLVD	LOS ANGELES	91436	7
MOBIL #11-FTL (14-155)	7553	TOPANGA CANYON BLVD	LOS ANGELES	91303	7
MOBIL #11-J1L	16955	SAN FERNANDO RD	LOS ANGELES	91344	0
MOBIL #11-M3K (FORMER)	4110	VERDUGO RD N	LOS ANGELES	90065	5C
MOBIL #17-LQ6	12500	SHERMAN WY	LOS ANGELES	91605	0
NEWLOWE/ECKDAHL WHSE	3410	SAN FERNANDO RD	LOS ANGELES	90065	5R

Site Name	Street No.	Street Name	City	Zip Code	Status
NORTH HILLS CAR WASH	10315	BALBOA BLVD	LOS ANGELES	91344	5R
PACIFIC BELL	4100	EAGLE ROCK BLVD	LOS ANGELES	90065	3A
PACIFIC BELL (G1-601)	3035	ANDRITA ST	LOS ANGELES	90065	7
ROCKWELL INTERNATIONAL CORP	6633	CANOGA AVE	LOS ANGELES	91303	5C
SAFETY-KLEEN CORPORATION	2918	WORTHEN AVE	LOS ANGELES	90039	5C
SHELL	2600	FIGUEROA ST N	LOS ANGELES	90065	5C
SHELL #204-1242-0604	22001	VANOWEN ST	LOS ANGELES	91303	3B
SHELL SERVICE STATION	3047	GLENDALE BLVD	LOS ANGELES	90039	5C
TERRY YORK MOTOR CARE	15800	VENTURA BLVD	LOS ANGELES	91436	5C
TEXACO	2900	RIVERSIDE DR	LOS ANGELES	90039	5C
TEXACO STATION	4072	VERDUGO RD	LOS ANGELES	90065	5C
THRIFTY #141	6851	TOPANGA CANYON BLVD	LOS ANGELES	91303	8
THRIFTY #227	11454	BALBOA BLVD	LOS ANGELES	91344	3B
THRIFTY #90	16851	SHERMAN WY	LOS ANGELES	91409	8
TINSAL ENTERPRISES	16961	DEVONSHIRE ST	LOS ANGELES	91344	1
TOPANGA CAR WASH	6829	TOPANGA CANYON BLVD	LOS ANGELES	91303	8
U-HAUL CENTER OF SUN VALLEY	7721	HOLLYWOOD WY	LOS ANGELES	91505	1
UNOCAL #0886	5166	LANKERSHIM BLVD	LOS ANGELES	91601	0
WESTLAND HEATING & AIR COND	3041	ROSWELL ST	LOS ANGELES	90065	5C
WORTHMAN OIL / MOBIL OIL	21404	SHERMAN WY	LOS ANGELES	91303	5C
76 PRODUCTS STATION #3018	10260	SEPULVEDA BLVD	MISSION HILLS	91345	3B
ARCO #1575	14761	DEVONSHIRE ST	MISSION HILLS	91345	3B
FULLER O'BRIAN PAINTS	15460	DEVONSHIRE ST	MISSION HILLS	91345	0
GAS S/S #3883	11109	SEPULVEDA BLVD	MISSION HILLS	91340	1
GEM FUEL	1601	TRUMAN RD	MISSION HILLS	91340	5R
JADE DEVELOPMENT COMPANY	15515	SAN FERNANDO MISSION BLVD	MISSION HILLS	91345	5C
MOBIL #11-HV4	14666	SAN FERNANDO MISSION	MISSION HILLS	91340	5C
TERRIBLE HERBST OIL COMPANY	11501	SEPULVEDA BLVD	MISSION HILLS	91345	5C
TIRE STATION	104	MACLAY AVE S	MISSION HILLS	91340	5R
THOMAS PROPERTY	291	BORCHARD RD	NEWBURY PARK	91356	3A
ARCO #1097	15350	NORDHOFF ST	NORTH HILLS	91343	3B
DEPT VET AFFAIRS MEDICAL CENTR	16111	PLUMMER ST	NORTH HILLS	91343	1
LEE NOVICK	15700	PLUMMER ST	NORTH HILLS	91343	0
MOBIL #18-KOQ FORMER #11-KOQ	9100	SEPULVEDA BLVD	NORTH HILLS	91343	1
SOUTHLAND CORP #20336	16929	ROSCOE BLVD	NORTH HILLS	91343	3A
THRIFTY #225	15705	NORDHOFF ST	NORTH HILLS	91343	5C
UNOCAL #59421	8705	SEPULVEDA BLVD N	NORTH HILLS	91343	8
76 PRODUCTS STATION #3263	5969	LAUREL CANYON BLVD	NORTH HOLLYWOOD	91607	1
76 PRODUCTS STATION #5261	4654	LAUREL CANYON BLVD	NORTH HOLLYWOOD	91607	0
CHEVRON #9-3909	4757	LAUREL CANYON BLVD	NORTH HOLLYWOOD	91607	5C
FAST FUEL FACILITY (FORMER)	11051	VICTORY BLVD	NORTH HOLLYWOOD	91606	3B
MOBIL #18-LC9 FORMER #17-LC9	6000	LANKERSHIM BLVD N	NORTH HOLLYWOOD	91606	0
SEVAN AUTO SERVICE	6050	VINELAND AVE	NORTH HOLLYWOOD	91606	3A
UNOCAL #6273	11705	VICTORY BLVD	NORTH HOLLYWOOD	91606	0
76 PRODUCTS STATION #5732	19301	NORDHOFF ST	NORTHRIDGE	91324	5C
76 PRODUCTS STATION #5740	8659	CORBIN AVE	NORTHRIDGE	91324	5C
ARCO #117	17000	DEVONSHIRE ST	NORTHRIDGE	91325	1
ARCO #1936	8700	BALBOA BLVD	NORTHRIDGE	91325	0
EXXON #7-3053	8655	RESEDA BLVD	NORTHRIDGE	91324	5C
EXXON #7-3623	18501	DEVONSHIRE ST	NORTHRIDGE	91324	5R
FORMER SERVICE STATION	17700	ROSCOE BLVD	NORTHRIDGE	91324	5C
GAS S/S	18473	DEVONSHIRE ST	NORTHRIDGE	91324	0
MOBIL #11-KAJ	19655	PARTHENIA ST	NORTHRIDGE	91324	5C
MOBIL #18-LEE FORMER #11-LEE	17011	LASSEN ST	NORTHRIDGE	91324	5C
PRICE CLUB	8801	TAMPA AVE	NORTHRIDGE	91324	0
RANCHO DRY CLEANERS	8805	RESEDA BLVD	NORTHRIDGE	91324	5C
RIKER LABORATORIES INC	19901	NORDHOFF ST	NORTHRIDGE	91324	7
RYDER TRUCK RENTAL	19133	PARTHENIA ST	NORTHRIDGE	91324	0
TIRE STATION	10141	BALBOA BLVD	NORTHRIDGE	91324	5R
UNOCAL #4865	9455	RESEDA BLVD	NORTHRIDGE	91324	1
WEST VALLEY REPAIR YARD	8840	VAN ALDEN AVE	NORTHRIDGE	91325	1
7-11 #18788	17710	SATICOY ST	RESEDA	91335	3B
76 PRODUCTS STATION #3692	19271	SHERMAN WY	RESEDA	91335	5C
ARCO #5041	6801	RESEDA BLVD	RESEDA	91335	3B
CIRCLE K #7943	8606	RESEDA BLVD	RESEDA	91335	5C
DEALS ON WHEELS	18804	SHERMAN WY	RESEDA	91335	5C
DON THIO PROPERTY	18541	SHERMAN WY	RESEDA	91335	5C
GVD COMMERCIAL PROPERTIES	18300	VANOWEN ST	RESEDA	91335	3A
MOBIL #11-F3B	19650	SHERMAN WY	RESEDA	91335	7
MOBIL #11-LPM	7208	RESEDA BLVD	RESEDA	91335	1
RESEDA-SATICOY CARWASH	7601	RESEDA BLVD	RESEDA	91335	5C
SHELL	6360	RESEDA BLVD	RESEDA	91335	0
SHELL	6761	RESEDA BLVD	RESEDA	91335	5C
SHELL #204-6420-0201	19309	SHERMAN WY	RESEDA	91335	7
SHERMAN CAR WASH	18815	SHERMAN WY	RESEDA	91335	5C
UNITED OIL #22	7558	RESEDA BLVD	RESEDA	91335	5C

Site Name	Street No.	Street Name	City	Zip Code	Status
VAN NUYS HELIPORT	8060	BALBOA ST	RESEDA	91335	0
WEST VALLEY POLICE STATION	19020	VANOWEN ST	RESEDA	91335	5C
WORLD OIL #74	18601	SHERMAN WAY	RESEDA	91335	3A
ARCO #1904	1753	TRUMAN ST	SAN FERNANDO	91340	7
CHEVRON #9-8879	13153	FOOTHILL BLVD	SAN FERNANDO	91340	0
DESERT PETROLEUM #59	1753	SAN FERNANDO RD	SAN FERNANDO	91340	5C
GASOLINE SERVICE STAT (FORMER)	1404	SAN FERNANDO RD	SAN FERNANDO	91340	5C
GTE SAN FERNANDO PLANT YARD	510	PARK AVE	SAN FERNANDO	91340	5C
MISSION CAR WASH	1601	SAN FERNANDO RD	SAN FERNANDO	91340	3B
RICHARD STERMAN	1955	GLENOAKS BLVD	SAN FERNANDO	91340	0
76 PRODUCTS STATION #2421	14478	VENTURA BLVD	SHERMAN OAKS	91423	5C
76 PRODUCTS STATION #3234	13271	MOORPARK ST	SHERMAN OAKS	91423	3B
76 PRODUCTS STATION #3645	15410	VENTURA BLVD	SHERMAN OAKS	91403	5C
ARCO #1361	14321	VENTURA BLVD	SHERMAN OAKS	91423	3B
GAS S/S #5914	12909	MAGNOLIA BLVD	SHERMAN OAKS	91423	7
GAS S/S #6183	4822	VAN NUYS BLVD	SHERMAN OAKS	91403	3B
MOBIL #11-FG9	13272	MOORPARK ST	SHERMAN OAKS	91423	7
MOBIL #11-FXV OLD CASE #951114-0	4528	SEPULVEDA BLVD	SHERMAN OAKS	91403	5R
SHELL #204-7199-0307	4404	WOODMAN AVE	SHERMAN OAKS	91423	7
SHERMAN OAKS CENTRIUM	5170	SEPULVEDA BL	SHERMAN OAKS	91403	3A
TEXACO	14344	VENTURA BLVD	SHERMAN OAKS	91423	7
VENTURA HAND WASH	13320	VENTURA BLVD	SHERMAN OAKS	91423	3B
WINALL STATION #17	4441	VAN NUYS BLVD	SHERMAN OAKS	91403	5R
WOODMAN OAKS CAR WASH	4625	WOODMAN AVE	SHERMAN OAKS	91423	7
76 PRODUCTS STATION #1736	10974	VENTURA BLVD	STUDIO CITY	91604	5C
76 PRODUCTS STATION #1747	12863	VENTURA BLVD	STUDIO CITY	91604	5C
ARCO #1680	5158	LAUREL CANYON BLVD	STUDIO CITY	91604	3B
COMMERCIAL BUILDING CENTER	4360	COLDWATER CANYON AVE	STUDIO CITY	91604	1
SHELL VIC#204-7564-0106	12456	VENTURA BLVD	STUDIO CITY	91604	0
SINCLAIR PAINT COMPANY	12203	VENTURA BLVD	STUDIO CITY	91604	0
THRIFTY #236	12500	VENTURA BLVD	STUDIO CITY	91604	7
ARCO #1298	9055	SUNLAND BL	SUN VALLEY	91352	5R
CHEVRON #9-0589	9110	GLENOAKS BLVD	SUN VALLEY	91352	0
HAWKER PACIFIC	11310	SHERMAN WY	SUN VALLEY	91352	3A
LIVINGSTON GRAHAM BLUE DIAMOND	11720	WICKS ST	SUN VALLEY	91352	0
MANNING FUEL INC	8407	TUJUNGA AVE	SUN VALLEY	91352	1
SHELL	11870	ROSCOE BLVD	SUN VALLEY	91352	0
SOUTHERN CA RTD DIV 15	11900	BRANFORD ST	SUN VALLEY	91352	5C
THRIFTY #127	9090	GLENOAKS RD	SUN VALLEY	91352	5C
ZAUNER'S AUTOMOTIVE	9089	GLENOAKS BLVD	SUN VALLEY	91352	3B
ARCO #1024	8160	FOOTHILL BLVD	SUNLAND	91040	5C
FIRE STATION #24	9411	WENTWORTH ST	SUNLAND	91040	3B
MOBIL	8505	FOOTHILL BLVD	SUNLAND	91040	5C
SUNLAND MAINTENANCE YARD	9401	WENTWORTH ST	SUNLAND	91040	0
CHEVRON #9-4969	19156	VENTURA BLVD	TARZANA	91356	5C
MOBIL #11-FOL	18468	BURBANK BLVD	TARZANA	91356	8
SHELL	18500	VENTURA BLVD	TARZANA	91356	3B
TARZANA CAR WASH	19348	VENTURA BLVD	TARZANA	91356	3A
THRIFTY #132	18226	VENTURA BLVD	TARZANA	91356	8
WORLD OIL #34	5605	RESEDA BLVD	TARZANA	91356	1
76 PRODUCTS STATION #2019	10984	RIVERSIDE DR	TOLUCA LAKE	91602	1
MOBIL #17-FDQ	10570	RIVERSIDE DR	TOLUCA LAKE	91602	0
MOBIL OIL CORP-KRX	4377	VINELAND AVE	TOLUCA LAKE	91602	1
10 UNIVERSAL CITY PLAZA	3838	LANKERSHIM BLVD	UNIVERSAL CITY	91608	3B
MCA/UNIVERSAL STG	100	UNIVERSAL CITY PLAZA	UNIVERSAL CITY	91608	8
VALENCIA WATER RECLAMATION PLN	28185	THE OLD RD	VALENCIA	91335	0
76 PRODUCTS STATION #1650	7161	SEPULVEDA BLVD	VAN NUYS	91405	1
9/1 VALLEY POLICE HEADQUARTERS	6240	SYLMAR AVE	VAN NUYS	91401	3B
ARCO #1035	7557	SEPULVEDA BLVD	VAN NUYS	91405	5C
ARCO #5201	15711	VICTORY BLVD	VAN NUYS	91406	3B
ARCO #6084	14903	VICTORY BLVD	VAN NUYS	91401	3B
BOB FAEBER VOLKSWAGEN	6115	VAN NUYS BLVD	VAN NUYS	91401	5C
CHEVRON	15709	VANOWEN ST	VAN NUYS	91406	0
CHEVRON #9-0316T (FORMER)	6810	SEPULVEDA BLVD	VAN NUYS	91405	0
CHEVRON #9-2766	5600	SEPULVEDA BLVD	VAN NUYS	91401	3B
CHEVRON #9-9164	14850	BURBANK BLVD	VAN NUYS	91401	3B
CHEVRON VAN NUYS TERMINAL	15359	OXNARD ST	VAN NUYS	91411	5C
CLAY LACY AVIATION	7435	VALJEAN AVE	VAN NUYS	91406	3B
CROWN CORK & SEAL COMPANY INC	8201	WOODLEY AVE	VAN NUYS	91406	5C
EXXON #7-3801	14850	VICTORY BLVD	VAN NUYS	91411	3B
FOREMAN HONDA	5511	VAN NUYS BLVD	VAN NUYS	91411	3A
GAS S/S	14106	BURBANK BLVD	VAN NUYS	91406	3B
JOSEPH GOULD	14655	VICTORY BLVD	VAN NUYS	91411	0
L.T. SAWYER INC	14117	AETNA ST	VAN NUYS	91401	5C
LA CITY DEPT WATER & POWER	14401	SATICOY ST	VAN NUYS	91405	5C
LA MANCHA DEVELOPMENT	14900	BURBANK BLVD	VAN NUYS	91411	0

Site Name	Street No.	Street Name	City	Zip Code	Status
MARQUART COMPANY	16555	SATICOY ST	VAN NUYS	91406	5C
MILLER INFINITY SITE	5455	VAN NUYS BLVD	VAN NUYS	91411	5C
MOBIL #11-FCG	15303	SHERMAN WY	VAN NUYS	91406	0
MOBIL #17-LTK	16106	SHERMAN WY	VAN NUYS	91406	0
MOBIL #18-FGC	6360	SEPULVEDA BLVD	VAN NUYS	91411	0
MOBIL #18-L1L FORMER #17-L1L	5955	WOODMAN AVE	VAN NUYS	91401	0
SHELL	5556	SEPULVEDA BLVD	VAN NUYS	91401	0
SHELL	13703	VICTORY BLVD	VAN NUYS	91401	0
UNITED OIL #9	16455	VICTORY BLVD	VAN NUYS	91406	7
UNOCAL #5233	15651	SHERMAN WY	VAN NUYS	91406	0
WESTERN COMMANDER, INC	16300	DAILY DR	VAN NUYS	91406	0
MARY MASELLIS	5955	FALLBROOK AVE	WARNER CENTER	91367	7
P L PORTER CO	6355	DE SOTO AVE	WARNER CENTER	91367	8
CHEVRON #9-0061	22756	VANOWEN ST	WEST HILLS	91307	5R
HUMANA HOSPITAL	7300	MEDICAL CENTER DR	WEST HILLS	91307	5R
SEARS AUTOMOTIVE CENTER #1308	6433	FALLBROOK AVE	WEST HILLS	91307	7
SHELL	22767	VANOWEN ST	WEST HILLS	91307	5C
AIR MARK PLASTIC CORP.	5711	CORSA AVE N	WESTLAKE VILLAGE	91316	3B
76 PRODUCTS STATION #4682	23706	VICTORY BLVD	WOODLAND HILLS	91367	1
76 PRODUCTS STATION #6170	5601	TOPANGA CANYON BLVD	WOODLAND HILLS	91367	3A
ARCO #6063	22004	CLARENDON ST	WOODLAND HILLS	91367	5R
CHEVRON #9-8982	24336	VICTORY BLVD	WOODLAND HILLS	91367	5C
GELB ENTERPRISES	22021	VENTURA BLVD	WOODLAND HILLS	91364	5C
LIVINGSTON PONTIAC-PEUGEOT	6133	TOPANGA CANYON RD	WOODLAND HILLS	91367	6
MOTION PICTURE & TELEVISION	23388	MULHOLLAND DR	WOODLAND HILLS	91364	5C
NIX AUTO SERVICES	20032	VENTURA BLVD	WOODLAND HILLS	91364	3B
RETAIL SHOPS-FORMER TEXACO	22401	VENTURA BLVD	WOODLAND HILLS	91367	3B
SHELL	23650	VICTORY BLVD	WOODLAND HILLS	91367	8
THRIFTY #220	6310	FALLBROOK AVE	WOODLAND HILLS	91367	5C
US POST OFFICE	22121	CLARENDON ST	WOODLAND HILLS	91364	8
VENTURA WEST CAR WASH	22517	VENTURA BLVD	WOODLAND HILLS	91364	5R
WOODLAND HILLS COUNTRY CLUB	21150	DUMETZ RD	WOODLAND HILLS	91364	3A

5. STATUS CODES

- 0 No Action
No action has been taken by the responsible party after the initial report of the leak.
- 1 Leak Being Confirmed
A leak is suspected at a site (i.e., poor inventory records, water in the tank, vadose monitoring system in alarm, etc.) but has not been confirmed. Includes inspection of the excavation, and tank and appurtenant plumbing to determine existence of leak. May also include taking samples from the excavation (or from borings for in-place closures) for analysis.
- 3A Preliminary Site Assessment Workplan Submitted
A workplan/proposal has been requested of, or submitted by, the responsible party in order to determine whether groundwater has been, or will be, impacted as a result of release from any underground tanks or associated piping.

This phase of work usually includes plans for the installation and sampling of up to three monitoring wells with one monitoring well placed in a verified down gradient location from the suspected point of a discharge. It may also include soil boring sampling, additional soil excavation, and disposal or treatment of contaminated soil.
- 3B Preliminary Site Assessment Underway
Implementation of a workplan addressing the above described tasks.
- 5C Pollution Characterization
Responsible party is in the process of installing additional monitoring wells and/or borings in order to fully define the lateral and vertical extent of contamination in soil and groundwater and assess the hydrogeology of the area. This phase of work may also include performing aquifer tests, soil gas surveys, continued groundwater gradient determinations and monitoring, assessing impacts on surface and/or groundwater.
- 5R Remediation Plan
A remediation plan has been submitted evaluating long term remediation options. A proposal and implementation schedule for an appropriate remediation option has also been submitted. This phase of work may also include preparing and submitting the necessary information for any permits needed prior to implementation of the plan (NPDES or WDR)
- 7 Remedial Action
Implementation of corrective action plan.
- 8 Post Remedial Action Monitoring
Periodic groundwater or other monitoring at the site, as necessary, in order to verify and/or evaluate the effectiveness of remedial activities.
- 9 Case Closed
The Regional Board and the Local Agency are in concurrence that no further work is necessary at the site.

APPENDIX C

General and Special Notice Recipients

104.0968	2L Screen Printing Co.	Mr. Steve Lorens	Vice President	2613 N. Ontario Street	Burbank	CA	91504	12/15/88	5/4/94	
	2L Screen Printing Co.	Ms. Mary Ann Lorens		11145 Marklein Avenue	Mission Hills	CA	91345			5/4/94
109.6262	Access Controls, Inc.			173 W. Magnolia Blvd.	Burbank	CA	91506	8/27/92		
	Access Controls, Inc.	Mr. Ranchito Allegre	Property Owner	5345 White Oak Avenue, No. C	Encino	CA	91318	8/27/92		
	Access Controls, Inc.	Mr. Cree Kofford	President	1900 S. 300 W.	Salt Lake City	UT	84115	8/27/92	10/12/95	
104.0182	Accessory Plating	Mr. Herb Needles	General Manager	3000 Empire Ave.	Burbank	CA	91504	12/15/88	5/2/89	
104.1364	Accurate Systems Corporation	Mr. William Flach	President	2211 Kenmore Avenue	Burbank	CA	91504		5/4/94	
109.0861	ACME Aerospace Inc.			500 S. Varney St.	Burbank	CA	91502	8/27/92		
	Acme Aerospace, Inc.	Mr. David J. Goodson	President	500 S. Varney Street	Burbank	CA	91502	8/27/92	10/12/95	
	Adella Metal Processing, Inc./Plus Mfg.	Mr. Stephen Saurenman		1505 Adella Street	South El Monte	CA	91733	5/2/95		
104.1304	Adler Screw Products Inc.	Mr. Erik Lirhus	President	3047 N. California St.	Burbank	CA	91504	12/15/88	5/2/89	5/4/94
113.0384	Admiral Controls, Inc.	Mr. David J. Higgins	President	4516 Cutter Street	Los Angeles	CA	90039	11/13/92	10/12/95	
	Aerogrip Corporation	Mr. Brian P. Barger	Counsel, Marshall & Melhorn	4 Seagate-6 Fl.	Toledo	OH	43604	12/15/88	5/2/89	
	Aerogrip Corporation	Mr. J. Richard Morgan	Vice President	3000 Strayer, P.O. Box 631	Maumee	OH	43537		5/4/94	
104.0003	A-H Plating, Inc.	Mr. Woodrow Robinson	President	1837 Victory Place	Burbank	CA	91504	12/15/88	5/4/94	
	Alfonso A. Darenzio Trust	Mr. Alfonso A. Darenzio	Trustee, Property Owner	503 Andover Drive	Burbank	CA	91504	8/31/92	10/12/95	
109.0076	All Metals Processing	Mr. Gerald Roach	President	264 West Spazler Street	Burbank	CA	91502	5/2/95		
	Allegre, Ranchito	Mr. Eli Meshulam	General Partner	5345 White Oak Ave., No. C	Encino	CA	91318		10/12/95	
	Allied Signal	Ms. Lea Gold	Counsel	555 S. Flower St. Suite 4000	Los Angeles	CA	90071		9/5/90	
	Amended Cooke Family Trust	Mr. Williams L. Cooke & Mr. Jerry Conrow	Co-Trustees	23871 Madison Street	Torrance	CA	90505	9/15/92		
113.0164	American Metaseal Company	Mr. Richard Canales	Richard & Laura Canales Trust	701 West Broadway	Glendale	CA	91204	5/2/95		
	American Metaseal Company	Mr. Richard Canales	President	701 West Broadway	Glendale	CA	91204	5/2/95	10/12/95	
	Andrzejewski, Piotrek and Eke			1431 La Solana Drive	Afadena	CA	91101	5/2/95	10/12/95	
	Anglois & Bannon, APC	Ms. Alexandra Laboulin Bannon		189 South Los Robles Avenue, Suite 711	Pasadena	CA	91101		5/4/94	
	Antonini Family Trust	Mr. & Mrs. Mario E. and Marisa A. Antonini	Trustees	11374 Tuxford Street	Sun Valley	CA	91352		10/12/95	
	Arnold and Margaret Peterson Trust	Mr. Arnold Peterson & Ms. Margaret Peterson	Trustees, Property Owners	539 Walnut Avenue	Burbank	CA	91501	8/31/92	10/12/95	
109.6573	Avibank Manufacturing, Inc.	Mr. Milton Barman	Chief Executive Officer	210 South Victory Blvd., P.O. Box 391	Burbank	CA	91503	9/5/95	10/12/95	
113.0352	A. G. Layne	Mr. Ted R. Lee		4578 Brazil Street	Los Angeles	CA	90039	5/2/95		
	A. G. Layne, Inc.	Mr. Michael Lee		4578 Brazil Street	Los Angeles	CA	90039		10/12/95	
104.0003	A.H. Plating, Inc.	Mr. Woodrow Robinson	President	1837 Victory Place	Burbank	CA	91504		5/4/94	
104.0167	Bangs Manufacturing	Mr. Joseph F. Bangs		1601 West Burbank Boulevard	Burbank	CA	91506		5/4/94	
109.5171	Barron Anodizing	Mr. Stuart Chase		810 Glenoaks Blvd.	Burbank	CA	91502	2/7/89	4/13/89	4/25/89
	Barrow Anodizing	Mr. Howard Greenberg	V.P. of Operations	1121 Isabel St.	Burbank	CA	91506	2/7/89	4/13/89	5/2/89
	Bassinger, Joseph and Wagner, Gordon N.			33 La Ceria Drive	Rancho Mirage	CA	92270	7/1/92		
	Belin Rawlings & Badal	Mr. David S. Poole		11601 Wilshire Blvd., Suite 2200	Los Angeles	CA	90025		10/12/95	
	Benco Enterprises, Inc.	Mr. William B. Hinkle	President	4800 Brazil Street	Los Angeles	CA	90039	11/13/92		
111.018	Bendix Corp.	Mr. Hugh H. Kellenberger	Manager of Facilities	11600 Sherman Way	N. Hollywood	CA	91605	8/28/88	5/2/89	
	Bendix Electrodynamics Division	Ms. Robin Oseas	Environmental Administrator	11600 Sherman Way	N. Hollywood	CA	91605	4/13/89	4/25/89	
	Bernie Family Trust	Mr. & Mrs. Melvyn J. and Laurie S. Bernie	Trustees	28787 Wagon Road	Agoura Hills	CA	91301		5/4/94	
	Binzley Family Trust	Mr. John Binzley and Ms. Ruth Binzley	Trustees	111518 Lynglen Drive	Glendale	CA	91206	5/21/93	10/12/95	
	BKT Enterprises, Inc.	Ms. Kay M. Glove	President	10901 Creek Road	Ojai	CA	93023		5/4/94	
	Brebbia, Albina		Property Owner	4209 Verdugo Road	Los Angeles	CA	90065		6/30/89	
	Brebbia, Charles and Albina			4209 Verdugo Road	Los Angeles	CA	90065		5/4/94	
113.0203	Brock Bus Lines	Mr. John Binzley		722 W. Wilson Ave	Glendale	CA	91203		10/12/95	
	Broderick Investment Co.	Mr. William F. Broderick		2600 W. Olive Avenue	Burbank	CA	91505		10/12/95	
109.0866	Burbank Steel Treating, Inc.	Mr. Kenneth L. Bennett		415 S. Varney Street	Burbank	CA	91504	8/31/92	10/12/95	
	Burbank Steel Treating, Inc.			415 S. Varney Street	Burbank	CA	91504	8/27/92		
109.0897	Burman Technical Services, Inc.	Mr. Norayr Davoodian	Property Owner	700 S. Flower Street	Burbank	CA	91502	8/31/92		
	Burman Technical Services, Inc.			700 S. Flower Street	Burbank	CA	91502	8/27/92		
104.0164	B. J. Grinding	Mr. Robert Holseth	President	2632 N. Ontario St.	Burbank	CA	91504	2/7/89	5/2/89	5/4/94
	California Car Hikers Service	Mr. Sam Adlen	President	11590 Tuxford Street	Sun Valley	CA	91352	7/16/93		
112.5638	Calmat Co.	Mr. A. Frederick Gerstell	President	3200 San Fernando Road	Los Angeles	CA	90065	7/16/93		
	Carl M. Buck Building Company	Mr. Carl M. Buck	Property Owner	8242 West Third St. Suite 300	Los Angeles	CA	90048	11/20/92	2/5/93	10/12/95
	Carl W. Newell Manufacturing	Mr. Carl W. Newell		6717 San Fernando Road	Glendale	CA	91201	5/2/95		
109.0091	Carl W. Newell Manufacturing	Mr. Carl W. Newell & Ms. Sylvia Newell		6717 San Fernando Road	Glendale	CA	91201	5/2/95		
	Ceballos, Chuck			2872 Regina Street	Thousand Oaks	CA	91360	8/31/90		
	Chase, Stuart		Property Owner	810 Glenoaks Blvd.	Burbank	CA	91502		5/2/89	
	City of Burbank	Mr. Ronald Blassi	General Manager, Public Services Department	164 West Magnolia Blvd. Box 631	Burbank	CA	91503		5/4/94	
	City of Glendale	Mr. Bertram Pauk	Public Service Director, City of Glendale	C.E. Perkins Building, 141 N. Glendale Ave.	Glendale	CA	91206	5/2/85		
109.5302	Collec Industries Inc.	Mr. David Margolis		430 Park Avenue	New York	NY	10022	6/9/93	10/12/95	
	Comet Plating Company Inc.			423 Mansfield Avenue	Los Angeles	CA	90036		10/12/95	
	Comet Plating Company Inc.	Mr. Philip Y. Bak	President	1207 Isabel St.	Burbank	CA	91508	8/27/92		
109.0884	Commercial Inspection Services	Mr. Mel Squires	President	156 Providencia Avenue	Burbank	CA	91502	5/2/95	10/12/95	
	Cosmic Investments Inc.	Mr. Eugene Cockran		608 Ruberta Avenue	Glendale	CA	91201		10/12/95	
113.5666	Courtauld Aerospace, Inc.	Mr. Colin Ravenhall		P.O. Box 1800	Glendale	CA	91209		10/12/95	
	Courtauld Aerospace, Inc.	Mr. Dean M. Willard	President	P.O. Box 4228	Woodland Hills	CA	91384	11/20/92		
	Courtauld Aerospace, Inc.			5430 San Fernando Road	Glendale	CA	91203	8/27/92		

General and Special Notice Recipients

104.0315	Crane Company	Mr. R. S. Evans	President	100 First Stamford Place, 4th Floor	Stamford	CT	96902	9/5/95	10/12/95	5/4/94
	Crane Company	Mr. D. R. King	V.P. of Manufacturing	Hydro-Aire Division, 3000 Winona Ave.	Burbank	CA	91510	2/7/89	4/13/89	4/25/89
109.1086	Credit Managers Assoc., of California	Mr. David T. Macomber		40 East Verdugo Avenue	Burbank	CA	91502			10/12/95
	Datron Inc.	Mr. Henry J. Peppers	President	2300 N. Barrington Rd. #800	Hoffman Estates	IL	60185	11/13/92	11/24/92	
	David J. Higgins Trust	Mr. David J. Higgins	Trustee	275 W. Kenneth Road	Glendale	CA	91202	11/13/92		10/12/95
104.0348	De King Screw Products	Mr. J. W. Dudley	Vice President	3328 Burton Avenue	Burbank	CA	91504	12/15/88		5/2/89
104.1433	Deltron Engineering, Inc.	Mr. Michael Filijan	President	2800 North San Fernando Blvd.	Burbank	CA	91504			5/4/94
	Deltron Engineering, Inc.	Ms. Toni Kuebler	Vice President	2800 North San Fernando Blvd.	Burbank	CA	91504	2/7/89	4/13/89	5/2/89
	Depper, Robert			31 Muth Drive	Orinda	CA	94583			5/4/94
	Depper, R.		Property Owner	3815 Broadway	Oakland	CA	94611			5/2/89
	Docan Properties, Inc.	Mr. Douglass D. Waldron	President	10250 Moorpark St.	North Hollywood	CA	91602	5/2/95		10/12/95
	Dorothy A. Kahl & William C. Kahl Trust	Ms. Dorothy A. Kahl & Mr. William C. Kahl	Trustees, Property Owners	10627 Wheeland Avenue	Sunland	CA	91040	8/31/92		
113.0185	Drilube Company	Mr. Walter J. Fairfax	President	711 W. Broadway	Glendale	CA	91204	11/13/92		
	Drilube Company	Mr. Walter J. Fairfax, Jr.	President	711 W. Broadway	Glendale	CA	91204	11/13/92		10/12/95
109.5378	Dynamic Plating, Inc.			1102 Isabel Street	Burbank	CA	91506	8/31/90		
	Edward Furer Trust	Mr. Edward Furer	Trustee, Property Owner	820 S. Mariposa Street	Burbank	CA	91506	8/31/92		
113.0356	EEMCO	Mr. Rick Stobaugh	Manager, Environmental Health & Safety	4585 Electronics Place	Los Angeles	CA	90039			10/12/95
	Elae Bruun-Andersen Trust	Mr. Niels Bruun-Andersen	Trustee	6829 Farndale Avenue	N. Hollywood	CA	91605	7/1/92		
104.0349	Estate of Eugene DeVandry	Mr. Geno DeVandry	Administrator	3330 Burton Avenue	Burbank	CA	91504			5/4/94
113.5243	Excello Plating	Mr. Glen Harleman	President	4057 Goodwin Avenue	Los Angeles	CA	90039	5/2/95		10/12/95
	EM Corporation	Mr. Gregory M. Keough	Vice President, Engineering	P.O. Box 2400, 2801 Kent Avenue	West Lafayette	IN	47906	7/1/92		
109.0885	Fiber-Resin Corporation	Mr. John T. Ray, Jr.	President	1200 County Road E, West	St. Paul	MN	55112	8/27/92		10/12/95
	Fiber-Resin Corp.			170 W. Providencia Ave	Burbank	CA	91503	8/27/92		
	Figgie International, Inc.	Mr. Walter M. Vanoy, Jr.	President	4420 Sherman Road	Willoughby	OH	44094	5/2/95		
104.1433	Filijan-Kuebler Properties	Mr. Michael Filijan		2800 North San Fernando Blvd	Burbank	CA	91504			5/4/94
111.1435	Fleetwood Machine Products, Inc.	Mr. William Cooke	President	11447 Vanowen Street	N. Hollywood	CA	91605	7/1/92		
1104.0449	Foto-Chem Industries, Inc.	Mr. William F. Broderick		2800 West Olive Avenue	Burbank	CA	91506	8/9/93		10/12/95
	Fulbright & Jaworski, L.L.P.	Mr. Tim C. Bruhnma		885 South Figueroa Street, 29th Floor	Los Angeles	CA	90017			10/12/95
109.0871	GCG Corporation	Mr. Eugene Crockran	President	608 Ruberts Ave., Room C	Glendale	CA	91201	8/27/92		10/12/95
111.2685	General Contractors Corporation	Mr. P. M. Harless	Vice President	1175 Aviation Place	San Fernando	CA	91340			5/4/94
	Glovatorium, Inc.	Mr. Robert Depper		3815 Broadway	Oakland	CA	94611			5/4/94
109.1036	Grant Products, Inc.	Mr. Tom Potet	President	700 Allen Avenue	Glendale	CA	91201	8/27/92		10/12/95
113.601	Greaff Fabrics, Inc.	Mr. William Foley	President	3340 Ocean Park Blvd., Suite 2000	Santa Monica	CA	90405	11/13/92		
113.0265	Griffin Printing and Lithograph Co., Inc.	Mr. John C. Thomas	President	544 W. Colorado Street	Glendale	CA	91204	11/13/92		
	Guerrero, Frank			11460 Dellmont Drive	Tujunga	CA	91042	8/31/90		
109.0528	Haskel, Inc.	Mr. Gary G. Freeman	Sr. V.P. Manufacturing & Materials	100 E. Graham Place	Burbank	CA	91502	2/7/89		10/12/95
	Haskel, Inc.	Mr. Frank J. Broderick	President	100 E. Graham Place	Burbank	CA	91205	8/31/92		
	Hastings, Janofsky & Walker	Ms. Joanne Goldhand		1298 Ocean Ave.	Santa Monica	CA	90401			6/30/89
111.0436	Hawker Pacific Corp.	Mr. Bob Wilson	Vice President	11310 Sherman Way	Sun Valley	CA	91352	2/7/89		
	Hawker Pacific Corp.	Mr. David Locklar	President	11310 Sherman Way	Sun Valley	CA	91352	7/1/92		
113.035	Hawkes Finishing	Mr. Phil Kantos	President	4626 Brazil Street	Los Angeles	CA	90039	5/2/95		
	Holsath Family Trust	Mr. & Mrs. Robert J. and Glenda I. Holsath	Trustees	2100 Maginn Street	Glendale	CA	91202			5/4/94
104.0555	Hydra-Electric Company	Mr. Henry P. Acuff	President	3151 Kenwood Street	Burbank	CA	91505			5/4/94
	Impulse Designs, Inc.	Mr. Alan M. Wiener	President	P.O. Box 39688	Los Angeles	CA	90039	11/13/92		
	Industrial Bowling Corporation		Property Owner	3300 West Olive Ave.	Burbank	CA	91504			8/30/89
	Industrial Bowling Corporation	Mr. John D. Howard	President	1819 West Olive Avenue	Burbank	CA	91506			5/4/94
109.5562	International Electronic Research Corp.	Mr. Ronald E. Steiner	President	135 West Magnolia Blvd.	Burbank	CA	91502	8/27/92		10/12/95
	International Electronic Research Corp.	Mr. & Mrs. Harvey & Marie Riggs and Mr. & Mrs. Fred & Wilma Miller	Property Owners	135 West Magnolia Blvd.	Burbank	CA	91502	8/27/92	2/5/93	10/12/95
	Irrevocable Living Trust	Mr. G. Edward Murphy and Ms. Kathleen Keaton	Trustees, Property Owner	1700 Morada Place	Altadena	CA	91001	8/31/92		
	ITT Corporation	Mr. Rand V. Araskog	President	1330 Avenue of the Americas	New York	NY	10019	8/27/92	11/20/92	10/12/95
	ITT Fluid Products	Ms. Theresa Olmsted	Manager, Environmental Projects	Aerospace Controls Division, 666 E. Dyer Rd.	Santa Ana	CA	92702	8/27/92	11/20/92	10/12/95
109.0582	ITT Fluid Products Corp.			801 Allen Avenue, 1200 Flower Street	Burbank	CA	91502	8/27/92		
104.0604	Janco Corporation	Mr. Robert J. Glove	President	3111 Winona Ave., P.O. Box 3038	Burbank	CA	91504			5/4/94
	Janco Corporation	Mr. Peter Kaskine	Executive Vice President	3111 Winona Ave., P.O. Box 3038	Burbank	CA	91504	12/15/88		5/2/89
	Joseph Woblisky Trust	Mr. Joseph Woblisky	Property Owner	500 S. Varney St.	Burbank	CA	91502	8/31/92		10/12/95
	Kahl, Olive				Burbank	CA	91502	8/27/92		
	Kahl, William C. and Dorothy A.		Trustees	10627 Wheeland Avenue	Sunland	CA	91040			10/12/95
104.0957	Kahr Bearing	Mr. D.L. Kleinhaus	President	3010 N. San Fernando Blvd.	Burbank	CA	91504	8/26/88		5/2/89
	Kahr Bearing	Mr. John E. McCauley		3010 N. San Fernando Blvd.	Burbank	CA	91504	8/24/88		
	Kelly Orye & Wanan	Mr. Kenneth A. O'Brien	Counsel	515 South Flower St., Suite 1100	Los Angeles	CA	90071			10/12/95
109.1062	K. T. Kitchen	Ms. Kathy Taggares	President	830 Sonora Avenue	Glendale	CA	91201	5/2/95		
104.065	La Agco Sales	Mr. Jack C. Gilbert	President	2930 N. San Fernando Blvd.	Burbank	CA	91504	4/13/89		
109.0656	Lawrence Engineering and Supply Co.	Mr. Ramon R. Smith	V.P./General Manager	500 S. Flower St.	Burbank	CA	91503	4/13/89	12/7/89	
	Lawrence Engineering and Supply, Inc.	Mr. Lester C. Lawrence	President	P.O. Box 30	Burbank	CA	91503	8/27/92		10/12/95
	Lawrence Engineering and Supply, Inc.			620 S. Flower St.	Burbank	CA	91502	8/26/89	8/27/92	
	Lirhus Family Trust	Mr. & Mrs. Eirik and Bergjol Lirhus	Trustees	826 East Groton Street	Burbank	CA	91504			5/4/94
	Litchfield, Hilton, Cameron Trust		Trustees	357 Medina Avenue	Lompoc	CA	93438	5/2/95		10/12/95

General and Special Notice Recipients

	Lockheed Aeronautical Systems	Mr. William A. Sullivan	Corporate Counsel	4500 Park Granada Blvd.	Calabasas	CA	91399	7/1/92			
	Lockheed Aeronautical Systems	Mr. James R. Buckley	Corporate Counsel	4500 Park Granada Blvd.	Calabasas	CA	91399			5/4/94	
	Lockheed Aeronautical Systems			2555 N. Hollywood Way	Burbank	CA	91520	1/20/88	8/24/88		
	Lockheed Corporation	Mr. Daniel M. Tollep	President	4500 Park Granada Blvd.	Calabasas	CA	91399	8/27/92		10/12/95	
109.1119	Loral Librascope Corporation	Mr. David Sweet		3501 Jamboree Blvd., Suite 500	Newport Beach	CA	92660	3/14/94		10/12/95	11/6/95
	Loral Librascope Corporation	Mr. Jonathan A. Swedlow	Counsel	9601 Wilshire Blvd., Suite 544	Beverly Hills	CA	90210	8/27/92	8/31/92		
104.1631	Los Angeles By-Products Co.	Mr. C.D. Vangorden	President	1810 East 25th Street	Los Angeles	CA	90058	7/16/93			
109.0884	L. A. Gauge Company, Inc.	Mr. James E. Hunt	Vice President	7440 San Fernando Road	Sun Valley	CA	91352			5/4/94	
	Mag Investments, Ltd.			158 W. Providencia Avenue	Burbank	CA	91502	5/2/95		10/12/95	
	Marvin M. Chalek Fourth Amended Inter-vivos Trust	Mr. Nicholas P. Connon	Counsel, Proskauer Rose Goetz & Mendelsohn	2121 Avenue of the Stars, Suite 2700	Los Angeles	CA	90067	7/1/92			
	Mason, Don			28300 Euclid Ave.	Euclid	OH	44092	5/2/95			
	McEntee, James N. and Mary G.			10739 Forest Street	Santa Fe Springs	CA	90670			5/4/94	
	McLaughlin, Denise E.			4737 Nelroy Way	Camichael	CA	95808			5/4/94	
	Mears Family Trust	Mr. James C. Mears		18 Hemitage Lane	Newport Beach	CA	92680	6/9/93		10/12/95	
104.0182	Mel Bernie and Company, Inc.	Mr. Melvyn J. Bernie	President	3000 Empire Avenue, Box 7761	Burbank	CA	91510			5/4/94	
	Mersola, Carl			444 E. Irvine Drive	Burbank	CA	91504			10/12/95	
	Mildred N. Bennett Trust	Ms. Mildred N. Bennett	Trustee, Property Owner	435 Birmingham Road	Burbank	CA	91504	8/27/92		10/12/95	
	Milwood & Mildred Cooke Trust		Trustee	634 N. Reese Place	Burbank	CA	91508	7/1/92			
109.5281	Monks Aerospace Inc.			1202 W. Chestnut Street	Burbank	CA	91506	8/27/92			
	Monks Aerospace, Inc.	Mr. R. J. Monks	President	1202 W. Chestnut Street	Burbank	CA	91506	8/31/92		10/12/95	
	Moss Family Trust	Mr. Raymond Moss & Ms. Dorothy Moss	Trustees, Property Owners	845 E. Magnolia Blvd., Unit F	Burbank	CA	91501	8/31/92		10/12/95	
	North America Philips Corp.	Mr. Joseph Vvolf		1033 Kings Highway	Saugerties	NY	12477	1/13/92		10/12/95	
	NovaCap	Mr. Leon Ellison	Owner	3433 Howard Way	Burbank	CA	91504	2/7/89	4/13/89	5/2/89	
	NovaCap	Mr. Andre P. Gallath	President	1811 N. Keystone St.	Burbank	CA	91504	12/15/88		5/2/89	
	NovaCap	Mr. Chad Johnson		16857 Citronia Street	Sepulveda	CA	91343	2/7/89	4/13/89	5/2/89	
104.0793	Ocean Technology, Inc.	Mr. James W. Majowski	Vice President	2835 N. Naomi St., P.O. Box 3185	Burbank	CA	91504	8/26/88		5/4/94	
	Ocean Technology, Inc.	Mr. Eugene Palic	Plant Engineer	2835 N. Naomi St., P.O. Box 3165	Burbank	CA	91504	8/26/88		5/4/94	
	P H Burbank Holdings, Inc.			333 South Grand Avenue	Los Angeles	CA	90071			10/12/95	
104.0812	Pacific Automotive Corporation	Mr. Eugene J. Fox		2940 North Hollywood Way	Burbank	CA	91505			5/4/94	
	Pacific Automotive Corp.	Mr. Eugene Fox	V.P./ General Manager	2940 N. Hollywood Way	Burbank	CA	91505	8/26/88		5/2/89	
	Pacific Bell Corporation	Mr. Philip J. Quigley	President	140 New Montgomery Street	San Francisco	CA	94105	8/27/92		10/12/95	
	Pacific Bell Corporation			720 Western Avenue	Glendale	CA	91201	8/27/92			
	Pacific Partnership	Mr. Thomas C. May	President	9363 Wilshire Boulevard	Beverly Hills	CA	90210			5/4/94	
111.0822	Pacific Steel Treating Co., Inc.	Mr. Lou Fruchey	President	6829 Farmdale Avenue	N. Hollywood	CA	91605	7/1/92			
	PH Burbank Holdings, Inc.	Mr. George Hempstead	Vice President	333 South Grand Avenue #3400	Los Angeles	CA	90071	5/2/95	9/5/95	10/12/95	5/4/94
110.0877	Photo-Sonics, Inc.	Mr. John Kiel	President	820 S. Margosa Street	Burbank	CA	91506	8/27/92			
	Pick-Your-Part Auto Wrecking			1301 E. Orangewood	Anaheim	CA	92805	7/16/93			
107.1374	Pius Manufacturing Company, Inc.	Mr. Stephen Saurerman		1503 Adelia Street	S. El Monte	CA	91733			10/12/95	
	Powers, Helen L.			750 Arcadia Avenue, #8	Arcadia	CA	91007	5/2/95			
104.1442	Premier Cleaners	Mr. David Love	Plant Manager	3238 N. San Fernando Road	Burbank	CA	91504	12/15/88		5/2/89	
	Premier Cleaners	Mr. R. Depper	Owner	3815 Broadway	Oakland	CA	94611	2/7/89		4/25/89	
104.5161	Premier Suede/Leather & Specialty Cleaners	Mr. William Tobias		3098 North California Street	Burbank	CA	91504			5/4/94	
	Premier Suede/Leather & Specialty Cleaners	Mr. William Tobias		3238 North San Fernando Road	Burbank	CA	91504	8/26/88			
	Prudential Insurance Company of America	Mr. Robert C. Winters	President	P.O. Box 9220 Law Department	Van Nuys	CA	91409			10/12/95	
	Prudential Insurance Company of America	Ms. Ana M. Perez		2029 E. Century Park, Suite 3600	Los Angeles	CA	90087	5/10/95			
	Prudential Realty Group	Ms. Ana Perez	Vice President, Asset Management	2029 Century Park East, Suite 3600	Los Angeles	CA	90087	5/1/95	9/7/95	10/12/95	
	Prudential Stevenson Real Estate Services	Mr. Charles C. Litchfield		1025 N. Brand Blvd. #206	Glendale	CA	91202	11/13/92		10/12/95	
	Prudential Stevenson Real Estate Services	Mr. Charles C. Litchfield		1025 N. Brand Blvd., #206	Glendale	CA	91202	5/2/95			
104.1612	R & G Sloane Manufacturing Co., Inc.	Mr. Bill P. Smith	President	7777 Sloane Drive	Little Rock	AR	72208			5/4/94	
111.0834	Raintree Buckles & Jewelry, Inc.	Mr. Larry Atterman	President	7115 Laurel Canyon Blvd.	N. Hollywood	CA	91605	7/1/92			
	Ralph's Grocery Co.	Mr. Alfred A. Marasca	President	1100 W. Artesia Blvd.	Compton	CA	90220	5/2/95		10/12/95	
	Rand Properties, Inc.	Mr. Jonathan A. Swedlow	President	345 N. Maple Drive # 378	Beverly Hills	CA	90210	8/31/92		10/12/95	
	Rand Properties, Inc., General Partner	Mr. Jonathan A. Swedlow	Counsel	9601 Wilshire Blvd., Suite 544	Beverly Hills	CA	90210	8/31/92			
111.0908	RDM Enterprises	Mr. Alton Hoel	Vice President	9270 Borden Ave.	Sun Valley	CA	91352	2/7/89			
	Regal Cleaners	Mr. Carl Mersola & Mr. David Y. Macomber		70 East Verdugo	Burbank	CA	91504	6/8/93	7/14/93		
111.0928	Remo, Inc.	Mr. Remo Belli	President	12804 Raymer Street	N. Hollywood	CA	91605	7/1/92			
104.015	Ryder Aerial Inc.	Mr. Carl D. Hill	Vice President	3111 Kenwood Street	Burbank	CA	91504			5/4/94	
	Sandra E. Bowman Living Trust	Ms. Sandra E. Bowman	Trustee	4245 Clybourne Avenue	North Hollywood	CA	91602			5/4/94	
	Sargent Industries, Inc.	Mr. Jerry W. Yochum	President	2727 N. Grandview Blvd., Suite 302	Waukegan	WI	53188			5/4/94	
	Schrick, Sharon E.			7525 Jeannie Court	Loomis	CA	95650			6/4/94	
111.0977 / 11	Sheffield Manufacturing	Mr. Gundy Tollefson	General Manager	9131 Glenoaks Blvd.	Sun Valley	CA	91352	12/15/88			
104.0986	Sierracin Corporation	Mr. Christoph Tribull	President	12780 San Fernando Road	Sylmar	CA	91342			5/4/94	
	Sierracin/Harrison	Mr. Larry Guttridge, et al.		2049 Century Park East	Los Angeles	CA	90067	12/15/88		5/2/89	
	Sonora Associates, Limited	Mr. Jonathan A. Swedlow	Property Owner	345 N. Maple Drive #376	Beverly Hills	CA	90210	8/31/92		10/12/95	
113.0905	Southern Pacific Transportation Co.			201 N. Front Street	Burbank	CA	91502	8/27/92			
	Southern Pacific Transportation Co.	Mr. D. M. Mohan	President	Southern Pacific Building, One Market Plaza	San Francisco	CA	94105	8/27/92		10/12/95	
104.0997	Space Lok, Inc.	Mr. Scott F. Wade	President	2526 North Ontario Street	Burbank	CA	91504			5/4/94	

General and Special Notice Recipients

	Space Lok, Inc.			2526 North Ontario Street	Burbank	CA	91504	8/24/88		4/25/89	
	Space Lok, Inc.	Mr. Larry Gutteridge	Counsel(?) Sidley and Austin	2049 Century Park East	Los Angeles	CA	90067	8/26/88	4/13/89	5/2/89	
104.1005	Stainless Steel Products, Inc.	Mr. Arthur L. Moore	President	2880 N. San Fernando Blvd	Burbank	CA	91504	12/15/88		6/30/89	5/4/94
109.1032	Standard Armament, Inc.	Mr. Curtis Correll	President	631 Allen Avenue	Glendale	CA	91201	8/27/82		10/12/95	
	Sterer Engineering and Manufacturing Co.	Mr. J. McKee	President	3000 Strayer Road	Maumee	OH	43537	11/13/92			
	Stevenson, Robert W.			1025 N. Brand Blvd.	Glendale	CA	91209	11/13/92			
104.1015	Steve's Plating Corporation	Mr. Terry S. Knezevich	President	3111 North San Fernando Blvd.	Burbank	CA	91504			5/4/94	
	Sunhill Partners/Uhlmann Offices		Property Owner	13245 Riverside Drive	Sherman Oaks	CA	91423			6/30/89	
113.548	Sunland Chemical & Research Corporation	Mr. Serge M. Dadone	President	5447 San Fernando Road	Los Angeles	CA	90039	9/5/95		10/12/95	
104.0487	Surface Finishing, Inc.	Mr. Steven Barr	President	2501 N. Ontario Street	Burbank	CA	91504	12/15/88		5/2/89	
	Thomson Family Trust	Mr. Joseph A. Thomson & Ms. Virginia L. Thomson	Co-Trustee, Property Owner	1831 Foothill Drive	Glendale	CA	91201	8/31/82		10/12/95	
	TRINOVA Corporation	Ms. Madonna F. McGrath		3000 Strayer Road	Maumee	OH	43537			10/12/95	
	Twiss Family Trust	Mr. & Mrs. William E. and Evelyn Twiss	Trustees	9741 Johanna Place	Sunland	CA	91040			5/4/94	
104.1078	Twiss Heat Treating Company	Mr. William E. Twiss	President	2503 North Ontario	Burbank	CA	91504	8/26/88		5/2/89	5/4/94
	Uhlmann Offices, Inc.	Mr. Lionel H. Uhlmann, Jr.	President	13245 Riverside Drive, Suite 500	Van Nuys	CA	91423			5/4/94	
104.1083	Valley Enamelling Corporation	Mr. Frank W. Nerren	President	2508 North Ontario Street	Burbank	CA	91504	8/26/88	4/13/89	5/2/89	5/4/94
109.6296	Vorelco, Inc.	Mr. Iain M. Anderson	President	3600 Hamlin Road, Mail Code 4A01	Auburn Hills	MI	48326	8/31/92		10/12/95	
	Vorelco, Inc.			825 N. Victory Blvd.	Burbank	CA	91502	8/27/82			
113.0964	W & W Manufacturing	Mr. Robert Wente	President	426 Magnolia Street	Glendale	CA	91204	5/2/95			
	W & W Manufacturing	Mr. Mel Pechter		426 Magnolia Street	Glendale	CA	91204			10/12/95	
110.0211	Walt Disney Pictures & Television	Mr. Harry Grossman		500 South Buena Vista Street	Burbank	CA	91521	6/9/93		10/12/95	
	Waschak Family Trust	Mr. & Mrs. John P. and Melba R. Waschak	Trustees	19500 Goldstream Way	Newhall	CA	91321			5/4/94	
	Waste Management Disposal Services of California, Inc.	Mr. Greg Loughnane	Division President & General Manager	9081 Tulunga Ave., 2nd Floor	Sun Valley	CA	91352	7/2/93			
	Weber Aircraft, Inc.	Mr. Michael LeBarre	President	1300 East Valencia Drive	Fullerton	CA	92631	9/5/95		5/2/89	5/4/94
	Western Magnetics			1733 S. Flower Street	Glendale	CA	91201	6/9/83			
	Westform Industries	Mr. Douglas D. Waldron, Jr.	President	4552 W. Colorado Blvd.	Los Angeles	CA	90039	5/2/95			
	Westpro Graphics	Mr. Douglas Waldron		4552 W. Colorado Blvd.	Los Angeles	CA	90039			10/12/95	
109.6162	Zero Corporation			777 Front Street	Burbank	CA	91502	8/27/92			
	Zero Corporation	Mr. Wilford D. Godbold, Jr.	President & Chief Executive Officer	444 S. Flower Street, Suite 2100	Los Angeles	CA	90071	8/27/92		10/12/95	

APPENDIX D



Pete Wilson
Governor

Department of Toxic Substances Control

Jesse R. Huff, Director
5796 Corporate Avenue
Cypress, California 90630



Peter M. Rooney
Secretary for
Environmental
Protection

MEMORANDUM

TO: Mr. Watson Gin, P.E., Chief, Permitting Division,
Hazardous Waste Management Program

FROM: Andres Cano, Hazardous Substances Engineering Geologist (HSEG) AC
Geological Services Unit (GSU),
Southern California Permitting Branch

CONCUR: Karen Baker, C.E.G., C.H.G. KTB
Supervising HSEG, GSU, Southern California Permitting Branch

DATE: September 1, 1998

SUBJECT: MARQUARDT COMPANY/FERRANTI INTERNATIONAL,
"GROUNDWATER MONITORING WELL INSTALLATION AND
SAMPLING, THE MARQUARDT COMPANY 16555 SATICOY STREET,
VAN NUYS, CALIFORNIA, JULY 1998

PCA 25120 SITE CODE 300219 WP 33 MPC 17

A request for internal geological services consultation was received by the Geological Services Unit (GSU), from Mr. Watson Gin, Chief of the Permitting Division, Hazardous Waste Management Program. The subject document was prepared by SCS Engineers for the Marquardt Company/Ferranti International. The following memoranda reviewing the Marquardt Company submittals were previously prepared by the GSU.

"Draft Baseline Health Risk Assessment Former RCRA Units, Marquardt Facility, 16555 Saticoy Street, Van Nuys, California, EPA ID No. CAD 044 696 102" dated January 25, 1996 by Andres Cano and Philip B Chandler, C.E.G.

"Draft Baseline Health Risk Assessment Former RCRA Units, Marquardt Facility, 16555 Saticoy Street, Van Nuys, California, EPA ID No. CAD 044 696 102," dated August 22, 1996 by Andres Cano and Karen Baker, C.E.G., C.H.G.

California Environmental Protection Agency

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"Revised Draft Baseline Health Risk Assessment Former RCRA Units, dated November 10, 1996 Marquardt Facility, 16555 Satcoy Street, Van Nuys, California, EPA ID No. CAD 044 696 102," dated February 21, 1997 by Andres Cano and Karen Baker, C.E.G., C.H.G.

-2- Declaration of Andres Cano, Ferranti International v. State of California, Superior Court of California, County of Los Angeles

The subject document was reviewed by the GSU for compliance with Department of Toxic Substances Control (DTSC) and United States Environmental Protection Agency (U.S. EPA) guidances and regulations regarding releases and characterization of hazardous wastes and constituents in soils and groundwater. Emphasis has been given to the issues of hydrogeology, data collection, analytical results, and distribution and concentration of soil contaminants reviewed in previous reports in relation to groundwater contamination revealed in the subject report. The goal of the Marquardt Company/Ferranti International is closure of the RCRA regulated units.

Introduction

The Geological Service Unit and the Marquardt Company/Ferranti International Hazardous Waste Facility (Facility) held meetings in August 1995 where the Facility agreed to a closure plan modification because contamination was detected under the permitted units making clean closure to background levels infeasible. The Facility contended that a risk-based closure was possible because the contamination was limited to low concentrations in shallow soils. DTSC agreed to the approach assuming that the extent of the contamination was limited to shallow soils.

The initial GSU Review (Memorandum January 25, 1996) found that the September 1995, Health Risk Assessment could not be approved without determining the vertical extent of the volatile organic compound (VOC) contamination. GSU staff met on several occasions with the consultant to reach an approved Workplan to describe the nature and extent but reached an impasse on the issue of meeting the requirements of the relevant U.S. EPA and DTSC guidances for RCRA Closure and investigation of hazardous waste facilities.

The Facility, in response to the GSU January 1996 memorandum, conducted further soil vapor and soil matrix sampling investigations in May 1996 without a DTSC approved workplan. From this investigation, it became apparent that VOC contamination extended to within 20 feet of groundwater and that the September 1995 Health Risk Assessment could not be approved without determining the impact to groundwater resources currently used for 15% of the drinking water supply for the City of Los Angeles.

The GSU memorandum of August 22, 1996 recommended that the Facility submit a workplan consistent with U.S. EPA and DTSC guidances to define the extent of the contamination in soils and groundwater.

The Facility representative and consultants then proposed that these levels were not high enough to cause groundwater contamination and conducted a second health risk assessment in November 1996 using vadose zone modeling to predict the impact to groundwater in lieu of actual groundwater data. This was against the prior verbal and written advice of the DTSC, that vadose zone modeling should not be conducted since the previous modeling did not predict actual conditions and vadose zone contamination indicated a threat to drinking water supplies.

DTSC continued to ask for an approved, complete RFI/Closure Workplan and Report for the RCRA regulated units and Solid Waste Management Units (SWMUs), which included a groundwater investigation. In response to this, the Facility has now submitted the, "Groundwater Monitoring Well Installation and Sampling," (Groundwater Report) without an approved workplan and which does not comply with DTSC and U.S. EPA guidances for characterization of hazardous waste facilities. At this point, Marquardt has sampled groundwater and has found contamination, but concludes that the contamination originated from another site.

In past workplans and reports submitted to DTSC for review, the facility has proposed interpretations which have been later proven by actual analytical data to be insufficient and technically incorrect.

Facility Interpretation 1. - Contamination was not present.

Data Result: The results of the Kleinfelder Report and shallow sampling conducted for the original closure plan indicated contamination under the Hazardous Waste Management Units (HWMUs) and SWMUs.

Facility Interpretation 2. - Contamination is present but is limited to shallow soils at low concentrations.

Data Result: The results of soil vapor sampling and soil matrix sampling found contamination to 130 feet. Groundwater elevation at the time was approximately 150 feet below ground surface (bgs) and is currently approximately 133 feet bgs.

Facility Interpretation 3. - Contamination is present at significant depths but the concentrations have not impacted and pose no future threat to groundwater.

Data Result: The results of groundwater sampling now show impact to groundwater from the same constituents detected in soils investigations.

Current Facility Interpretation - Groundwater is contaminated but all contamination is due to unnamed upgradient off-site sources which have not been researched.

Conclusions

The GSU has evaluated the, "Groundwater Monitoring Well Installation and Sampling," investigation report (Groundwater Report) submitted by the Facility's consultants and has found it to be severely deficient. Marquardt installed four monitoring wells and conducted one groundwater sampling event in June 1998. Data from the report indicate groundwater has been impacted by 15-150 micrograms per liter ($\mu\text{g/l}$) 1,1-dichloroethene (DCE), 8.8 $\mu\text{g/l}$ tetrachloroethene (PCE), and 7.8 $\mu\text{g/l}$ trichlorofluoromethane (TCFM).

The groundwater report concludes that the contamination detected in groundwater is not from the facility and that the contamination is originating from an off-site upgradient source. The GSU strongly disagrees with this conclusion. Based on the site history, soil matrix, soil gas and groundwater data presented to date, the GSU believes the groundwater contamination is likely the result of operations at the facility and that the facility should conduct a complete groundwater investigation to define the full nature and extent (lateral and vertical) of the impact to groundwater.

Bases for GSU Conclusions

The GSU strongly disagrees and takes issue with the following conclusions of the report.

(A) *"Based on the following facts the soil data was interpreted as indicating deposition of 1,1 DCE from groundwater:*

- *1,1 DCE had no reported use at the site.*
- *1,1 DCE detected in bulk soil samples from HWS C only at 100 feet and deeper.*
- *Water levels have, historically, fluctuated."*

Even though use or disposal of hazardous chemicals including DCE is not reported they are found in shallow, as well as, deep soils. It is common for facilities to have no record of use of chemicals found in soils beneath their facilities. DCE is a component commonly found in gasoline and other fuels which were stored on-site. The RCRA Preliminary Assessment, October 9, 1992 stated the following:

"As many as 32 USTs have been installed at Marquardt over the past 50 years, most of which are known to have contained various fuels (5). It is not known if any USTs, other than the one removed in 1988, contained hazardous wastes or waste oil. Current regulatory records indicate that 16 USTs may still be on site, although a geophysical survey determined the locations of only three . . ."

The report contends that, "*1,1 DCE detected in bulk soil samples from HWS C only at 100 feet and deeper.*" However, the report fails to mention that DCE was detected in all 14 soil vapor samples taken below Hazardous Waste Storage Area C from 10 to 74 feet bgs, with concentrations increasing with depth (see attached Table 4).

The facility consultant partially bases their interpretation: ". . . as indicating deposition of *1,1 DCE from groundwater . . .*" on the fact that, ". . . groundwater has, historically, fluctuated." In 1994 groundwater elevations were reported to be 150 feet bgs (Upper Los Angeles River Area [ULARA] Watermaster) and in the subject study, groundwater elevation was reported between 133.10 to 134.71 feet bgs. Clearly groundwater elevation has historically fluctuated. However, the groundwater fluctuation from 133 to 150 feet bgs could not cause contamination to be deposited at 10-74 feet bgs. The GSU places no credence in the argument that groundwater at 137 feet bgs is off-gassing DCE vapors migrating up to depths between 10 and 74 feet bgs.

The report also concludes that the DCE contamination "*. . . is interpreted as originating from an upgradient source.*" The information that DCE is found continuously in soil gas samples from 10 to 74 feet bgs under Hazardous Waste Storage Area A, in soil matrix samples at 100, 120 and 130 feet (see Table 3) and is also found in groundwater samples at 150 $\mu\text{g/l}$ from groundwater monitoring well MW-2, adjacent to the unit. This shows that there is a direct track of contamination from the shallow subsurface to groundwater.

The assertion that the groundwater contamination is emanating from an upgradient source is not supportable by one groundwater monitoring event. Since groundwater has been shown to fluctuate this must be accompanied by some variation in flow direction and gradient as well. Therefore, it would imprudent to base the responsibility for an upgradient source on one event. In addition, MW-2 is not acceptable as a background well. MW-2 is currently downgradient and adjacent to hazardous waste storage area C. A background well is generally defined as a point not affected by releases to soils and groundwater and is generally upgradient and in this case must be off-site. The upgradient flow direction is known to vary to some extent and currently conflicts with the usually consistent regional flow direction.

(B) "*In SCS's opinion, the 1,1-DCE detected in these wells is not a breakdown product of PCE since this chemical is normally considered only a minor product*"

of the PCE degradation (through TCE) and since cis-1,2-dichloroethene (cis-1,2-DCE), which is normally more abundant as such a breakdown product was not detected."

The biological, chemical and physical degradation pathways of halogenated volatile organic compounds in subsurface environments are not understood well enough to categorically exclude the presence of 1,1-DCE as a degradation product. DCE is a breakdown product of TCA, TCE and PCE¹, which were stored and used at the facility at numerous locations and is found in numerous soil samples. In addition, it has already been established from the soil vapor data that there was a direct source of DCE as evidenced by Table 4 of the Groundwater Report and the previously documented presence of a large number of underground fuel tanks.

- (C) *"PCE was detected at a trace concentration (8.8 µg/l) in the groundwater sample from well MW-2. This concentration is only slightly above the published drinking water Maximum Contaminant Limit (MCL) for PCE of 5 µg/l. Although PCE was detected in soils [sic] the area of HWS C, it was not detected at depths below 100 feet. The PCE detected in well MW-2 may thus also have an off-site, upgradient source."*

Table 3 of the groundwater report shows that contamination was continuously detected in soil matrix samples (which have been shown to underestimate contaminant mass) from 20 to 70 feet bgs in sample B-13. The deepest 70-foot sample had the highest concentration (92 µg/l) detected in this area, leading the GSU to question why the borings were terminated before the extent of the contamination was defined and before samples of the entire vadose zone column had been collected. As shown in Table 3, many borings throughout the investigation indicated that contamination was constant with or increased with depth. Table 4 again shows that PCE was detected in all 14 soil gas samples to depths from 10 to 74 feet. The GSU does not agree with the interpretation that the groundwater contamination of 8.8 µg/l is due to an upgradient source, and is not attributable to the soil contamination detected in the soil column above it, because PCE soil contamination is found continuously in soil gas samples from 10 to 74 feet bgs and in soil matrix samples at 70, 80, and 100 feet bgs.

The GSU strongly disagrees and takes issue with the characterization of groundwater analytical results which exceed the Maximum Contaminant Levels as insignificant. This aquifer is used as the primary groundwater source for the City of Los Angeles. The primary role of DTSC is to protect human health. Any exceedances of levels which could present a threat to public health must be characterized, remediated or controlled to prevent exposure to humans or the environment. The references to these concentrations as "trace levels" and "insignificant" are

¹ - "The Soil Chemistry of Hazardous Materials" by James Dragun, 1988

contradictory to the body of scientific research which shows that exposure to even small concentrations of hazardous chemicals can cause health problems especially when ingested in drinking water. There has been no risk assessment performed in regards to contaminated groundwater which establishes these concentrations as safe. The ULARA Watermaster, the owner of the water rights in the area and the community must be included in any decision regarding contamination left in place.

Recommendations

The facility has repeatedly failed to submit workplans for DTSC approval and submits data reports that do not comply with DTSC and U.S. EPA guidances. This has resulted in a piecemeal submittal of raw data and reports which do not meet the minimum requirements of the relevant guidances. The GSU believes it would be more cost effective for the facility to submit a RCRA Closure/RCRA Facility Investigation Workplan for DTSC approval. If such a workplan had been written as requested by DTSC in 1996 the RFI/Closure may have been completed by now. Instead the Facility continues to ignore the standard procedures for characterization of hazardous waste sites and produces data which are incomplete, prolonging the process and increasing costs.

The GSU offers the following recommendations for completing the groundwater investigation.

1. The facility should submit a water quality monitoring plan (WQMP) for DTSC review and approval. The WQMP should detail how groundwater monitoring samples will be collected, handled and analyzed. This WQMP should be used for all future groundwater monitoring. The facility should begin a schedule of a minimum of three additional groundwater sampling events to provide a minimum of four quarters of groundwater data as requested in previous letters to Marquardt.
2. The facility should submit a workplan for DTSC review and approval to install a monitoring well network to conduct a thorough investigation of the nature and extent of groundwater contamination from all the HWMUs and SWMUs at the facility. Background concentrations, as well as, the lateral and vertical extent of contamination, should be determined.
3. The facility should install deep semi-permanent soil vapor probes constructed under an approved RFI/Closure Workplan to complete the investigation of the deep vadose zone VOC contamination at the HWMUs and SWMUs.
4. The Facility should be required to submit the complete data, reports, and accompanying

interpretations from the following reports and investigations: Geophysical survey(s) to investigate underground storage tanks, Mittlehauser Investigation to determine if contamination was detected under the RCRA units, and the complete Kleinfelder report (including text and interpretations).

5. The facility should notify DTSC in writing and by phone at least 10 business days prior to any further investigation, well installation or sampling. DTSC should be provided with colocated groundwater or soil samples for independent analyses and evaluation.

Supporting General Comments

1. General Comment - The Facility should clearly define the study area of the Groundwater Report. DTSC has suggested that a phased approach be used at the Facility to investigate parcels. However, the Facility and DTSC have not agreed to the partitioning of parcels. The report seems to propose to clear the entire western area of the facility or the area from the western boundary to Building 95/95A? The Groundwater Report must address all the HWMUs and SWMUs subject to RCRA Closure and Corrective Action within the study area (see next comment) not just the Hazardous Waste Storage Areas.
2. General Comment - This report does not address the investigation of the other RCRA Units listed in its Interim Status Document: Treatment Area 109, Treatment Area 101, Treatment Area 115, Hazardous Waste Storage Area B and Test Cells 1, 9 and PRL. It does not address investigation of the following buildings and activities defined as SWMUs which are in the undefined study area. Under State and Federal statutes and regulations all releases on the same property as RCRA permitted or ISD units, including those from SWMUs and areas of concern (AOCs) are subject to corrective action. This requires the Facility to investigate all known or suspected releases on the Facility property. For purposes of this review the study area is assumed to extend from northern boundary south to the line formed from the Kaiser/Marquardt leased portion boundary to the west boundary near treatment unit 109:

Used oil storage tank and clarifier east of Building 116
1000 gallon TCA tank and associated sumps in Building 116
TCA tank, ordnance manufacturing, machining and painting in Building 115
Ordnance testing and storage areas in the Building 117
Underground cistern, paint and solvent use or storage in former Building 117
Manufacturing, storage and shipping in Building 95
Maintenance shop, garage, vacuum furnace, heat treating and shot blast machine areas in Building 95A
Explosive Storage in Building 112

Former UST near Building 29
Clarifier near Building 101
Clarifier near Building 27
Maintenance Storage in Building 7
Machine shop, paint shop and cure oven in Building 3A

3. General Comment - No wells were drilled to evaluate the potential impact from the SWMUs. The SWMU with the highest concentrations on the Facility is the vapor degreaser pit in Building 109. Previous soil gas samples showed concentrations of 12,800,000 micrograms per liter ($\mu\text{g/l}$) TCA and concentrations continued to be detected at 45 feet with the vertical extent yet to be defined. SCS Engineers previously proposed soil vapor extraction for this area. The area currently leased to Kaiser/Marquardt contains some of the highest concentrations of VOCs in shallow soils (6 feet bgs).
4. General Comment - The GSU has repeatedly expressed in meetings, in its memoranda, and declarations the severe underestimation of VOC contaminant mass in analyses of soil matrix samples for VOCs and asked that soil gas methods be used to characterize the extent of contamination in the vadose zone. The facility consultant in its own workplan agreed to the placement of deep semi-permanent soil vapor probes to alleviate this problem with soil matrix samples. After encountering contamination at the vertical limit of the direct push technology, the consultant disregarded the submitted workplan which called for deep semi-permanent soil vapor probes and instead proceeded with soil matrix sampling. The second attempt at vadose zone modeling was based largely on selected deep soil matrix analytical results. The GSU has repeatedly pointed to the fact that DTSC, U.S. EPA and the regulatory community have found that soil matrix analytical results severely underestimate concentrations of volatile organic compounds in soils. The Facility in its current report continues to rely on soil matrix analytical data even after it has been shown to severely underestimate VOC contaminant mass as shown in the following examples from the data SCS has submitted in the groundwater report.
 - Table 3 (attached) shows the results of soil matrix (bulk soil) analyses for 1,1 dichloroethene (DCE) and 1,1,1 trichloroethane (TCA) beneath Hazardous Waste Storage Area C. Compare Table 3 with the soil gas concentrations detected in the same area for the same constituents shown on Table 4. TCA and DCE are rarely detected in soil matrix sample analyses but were consistently detected by soil gas analyses in the same area at the same depths.
 - The same contrast is shown in Table 5 and Table 6. Table 5 indicates that no DCE was detected whatsoever in the soil matrix analyses, compared with Table 6 which

shows soil gas analyses consistently detected DCE contamination in the same area and the same depths.

- U.S. EPA and the regulatory community share the concerns regarding VOC contaminant mass underestimation in soil matrix analyses, which culminated in the recently revised collection, preparation, preservation methods contained in the U.S. EPA SW-846 Update III. Update III methods 5035 and 5021 require additional collection preservation and preparation methods to prevent contaminant losses.
5. General Comment - Upgradient, off-site groundwater elevation measurement and analyses from a DTSC approved well are necessary to assure that the on-site wells are measuring site derived contamination and to determine whether any potential off-site sources exist. Monitoring well MW-2 does not qualify as an upgradient background well. RCRA Closure and Facility Investigation Reports are required to research potential upgradient sources of contamination. The GSU suggests that it would be technically indefensible to accept assignment of responsibility for groundwater contamination to unnamed off-site sources which have not been researched.
 6. General Comment - Groundwater flow direction and water level contours seem to conflict with the latest regional groundwater flow direction documented by the ULARA Watermaster Annual Report. Water level information from the ULARA Watermaster monitored wells and any other monitoring wells nearby should be used in further studies.
 7. General Comment - The Facility consultant has proposed a total of two groundwater monitoring events. Two events are not adequate for evaluating whether any site is responsible for groundwater contamination. Sampling and analytical results, flow direction variations, seasonal water level fluctuations, natural fluctuations in contaminant concentration and distribution, disturbances due to drilling techniques, design of the monitoring well network and sampling techniques are but a few of the many variables that can interfere with the accuracy of groundwater monitoring results. DTSC has not been given the opportunity to comment or evaluate any of these factors.
 8. General Comment - Due to time constraints, all of the deficiencies in the report have not been listed. However, a short list is included to illustrate the fact that the report does not comply with DTSC and U.S. EPA guidances. The following elements were missing from the subject report:

L.A. County Monitoring Well Permits
Detailed well installation procedures

Applicable Health and Safety Plan
Decontamination Procedures
Disposition/manifests of cuttings, purge water and decontamination rinsate
Groundwater concentration graphs
Documentation of calibration and type of field parameter measurement equipment
Photo ionization detector (PID) Readings
Geologic cross-sections
Contaminant concentration contours in plan and cross-section views
Constituents of Concern
Statistical determination of background
Potential Receptors
Uses of groundwater resources
Regional background investigation
Sampling personnel
Bailer type
Preservative(s)
Laboratory narrative including an evaluation of holding times, control limits, QA/QC
Equipment blanks and field blanks
Seasonal minimum and maximum and hydrographs
Monitoring, production, observation wells within a one-mile radius

Supporting Specific Comments

1. Page 3, Groundwater Monitoring - "These locations, shown on Figure 2, were identified in advance to DTSC staff, who did not object to them." The GSU takes strong issue with this statement since it implies GSU agreement with the locations of the proposed groundwater monitoring wells. The DTSC representatives, Karen Baker and Andres Cano, have never implied approval of this groundwater investigation either verbally or in writing. DTSC staff had been instructed by legal counsel to not comment on proposals concerning groundwater due to pending litigation. DTSC staff will always try to make themselves available to listen to any proposal or topic which the facilities would like to discuss. However, our willingness to listen does not constitute our tacit approval. In a meeting with Marquardt Facility, representatives submitted well locations. Ms. Bonnie Wolstoncroft of the DTSC Office of Legal Counsel directed DTSC staff to only discuss corrective action and not to discuss groundwater investigation.
2. Page 4, Monitoring Well Sampling and Analyses - The groundwater analyses suite is wholly inadequate. Groundwater samples were not analyzed for all the constituents of concern at this Facility. Groundwater should be analyzed for all constituents detected in soils and known to have been treated and stored on the site. Some constituents of

particular concern were omitted. These are listed as follows with their corresponding U.S. EPA methods where applicable: perchlorate, hexavalent chromium (218.6), the full list of Title 22 Metals (6010), the full list 8260 including all of the Freon class of halogenated compounds, and the full list of semi-volatile organic compounds (8270).

3. Page 4, Monitoring Well Sampling and Analyses - This section indicates that the well MW-2 was purged to dryness. In the future, the wells should be purged at a rate not to exceed the recovery rate of the well (U.S. EPA "RCRA Ground-Water Monitoring: Draft Technical Guidance, November 1992"). Purging to dryness may lead to reduced concentrations of volatile organic compounds which may not be representative of groundwater contaminant concentrations.
4. Page 4, Groundwater Monitoring Well Installation and Development - No sieve analyses or rationale was presented for selection of the filter pack or screen slot size. Improper selection may have caused the high total dissolved solids (TDS) analytical results.
5. Page 5, Analytical Results, Page 6, Conclusions and Recommendations - The report characterizes the groundwater resources in this aquifer as "... *marginal for domestic use.*" "... *generally unusable for domestic purposes*" and, "... *of poor quality and not suitable for domestic uses* ..." These statements are inappropriate and inaccurate. The ULARA Watermaster indicates that this aquifer is the source of approximately 15% of the drinking water for the City of Los Angeles. The Regional Water Quality Control Board Basin Plan designates the water in the Upper Los Angeles River Area as MUN, having beneficial uses for drinking, agricultural and industrial supply, and subject to the anti-degradation policy.
6. Appendix B - The boring logs or the text did not document any photo ionization detector measurements from the borehole at the surface, from the discharged cuttings or air. This may have revealed significant data.

If you have any questions, please contact me at (714) 484-5421.

cc: J. Kou
Y. Garza
T. Suzuki
B. Wolstoncroft
P. Lattaker
File

**TABLE 3. VOC ANALYTICAL RESULTS, BULK SOIL SAMPLES
HWS AREA C, MARQUARDT FACILITY
VAN NUYS, CALIFORNIA**

Boring Number	Depth (feet)	VOCs					
		PCE	1,1-DCE	DCM	1,1,1-TCA	Toluene	Xylenes
B1	0.5	10	<5	<50	<5	36	<5
	3	<5	<5	<50	<5	<5	<5
B2	0.5	19	<5	<50	<5	145	<5
	3	23	<5	<50	<5	52	<5
B3	0.5	54	<5	<50	32	34	<5
	3	18	<5	<50	<5	47	<5
B4	0.5	<5	<5	<50	<5	292	6
	3	36	<5	<50	7	106	<5
B5	5	8	<5	<50	<5	33	<5
	10	26	<5	<50	<5	77	<5
B6	5	27	<5	<50	<5	95	<5
	10	27	<5	<50	<5	68	<5
B7	5	20	<5	<50	<5	51	<5
	10	<5	<5	<50	<5	29	<5
B8	15	13	<5	<50	<5	22	<5
	20	<5	<5	<50	<5	<5	<5
B9	5	39	<5	<50	<5	66	<5
	10	34	<5	<50	36	91	<5
B10	5	46	<5	<50	<5	30	<5
	10	24	<5	<50	<5	22	<5
	15	8	<5	<50	<5	11	<5
	20	<5	<5	<50	<5	<5	<5
B11	5	<5	<5	<50	<5	<5	<5
	10	50	<5	<50	<5	41	<5
B12	5	55	<5	<50	<5	50	<5
	10	36	<5	<50	<5	55	<5
B13	20	20	<5	<5	<5	-	-
	40	32	<5	<5	<5	-	-
	50	112	<5	<5	8.9	-	-
	60	8.8	<5	<5	<5	-	-
	70	92	<5	<5	<5	-	-
B14	70	16	<5	<5	<5	-	-
	80	5.3	<5	<5	<5	-	-
	80	<5	<5	<5	<5	-	-
	100	27	36	7.3	<5	-	-
	110	<5	<5	<5	<5	-	-
	120	<5	49	22	<5	-	-
	130	<5	14	<5	<5	-	-

- Not Analyzed
PCE = Tetrachloroethene
1,1-DCE = 1,1-Dichloroethene

DCM = Dichloromethane
1,1,1-TCA = 1,1,1-Trichloroethane

**TABLE 4. ANALYTICAL RESULTS, SOIL VAPOR SAMPLES
HWS AREA C, MARQUARDT FACILITY
VAN NUYS, CALIFORNIA**

Point Number	Sample Depth (feet)	VOCs			
		1,1-DCA	1,1-DCE	PCE	1,1,1-TCA
SV1 (IV-1a)	10	<1.0	16	4.8	2.8
	20	<1.0	25	11	5.6
	30	<1.0	35	17	10
	40	<1.0	56	20	13
	50	<1.0	61	25	16
	60	<1.0	63	17	15
	70	<1.0	86	21	10
SV2 (IV-1b)	10	<1.0	12	12	3.2
	20	<1.0	18	12	4.5
	30	<1.0	24	14	6.4
	54	1.4	63	22	9.3
	54 (Dup.)	1.4	61	17	9.9
	61	1.3	63	20	10
	74	1.6	76	17	6.5

Note: Only VOCs detected are listed.

Note: Alternate sample designation are noted in parenthesis.

1,1-DCA = 1,1-Dichloroethane

1,1-DCE = 1,1-Dichloroethene

PCE = Tetrachloroethene

1,1,1-TCA = 1,1,1-Trichloroethane

**TABLE 5. VOC ANALYTICAL RESULTS, BULK SOIL SAMPLES
HWS AREA D, MARQUARDT FACILITY
VAN NUYS, CALIFORNIA**

Boring Number	Depth (feet)	VOCs			
		PCE	Toluene	1,1,1-TCA	TCE
B1	0.5	7	310	<5	<5
	3	<5	<5	<5	<5
B2	0.5	<5	<5	<5	<5
	3	<5	<5	<5	<5
B3	0.5	<5	38	<5	<5
	3	<5	<5	<5	<5
B4	0.5	<5	177	<5	<5
	3	<5	18	23	<5
B7	5	7	29	<5	<5
	10	6	50	<5	<5
B8	5	<5	31	<5	<5
	10	<5	43	<5	<5
	15	11	19	<5	<5
	20	<5	9	<5	<5
B9	5	9	65	<5	<5
	10	6	11	<5	<5
B10	20	7.8	-	<5	<5
	40	11	-	<5	<5
	50	14	-	<5	<5
	60	9.4	-	<5	<5
	70	18	-	<5	5.0
B11	70	18	-	<5	<5
	80	5.7	-	<5	<5
	90	8.5	-	<5	<5
	100	<5	-	<5	<5
	110	<5	-	<5	<5
	120	<5	-	<5	<5

- = Not Analyzed

PCE = Tetrachloroethene

1,1,1-TCA = 1,1,1-Trichloroethane

TCE = Trichloroethene

**TABLE 6. ANALYTICAL RESULTS, SOIL VAPOR SAMPLES
HWS AREA D, MARQUARDT FACILITY
VAN NUYS, CALIFORNIA**

Point Number	Sample Depth (feet)	VOCs				
		1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE
SV1 (III-5a)	10	<1.0	13	2.8	<1.0	<1.0
	20	<1.0	47	6.0	<1.0	2.0
	30	<1.0	<1.0	1.6	<1.0	<1.0
	35	<1.0	48	9.7	<1.0	2.7
	40	<1.0	23	3.7	<1.0	1.3
	50	<1.0	27	3.3	<1.0	1.4
	60	<1.0	20	3.0	<1.0	<1.0
SV2 (III-5b)	10	<1.0	<1.0	<1.0	<1.0	<1.0
	20	<1.0	<1.0	<1.0	<1.0	<1.0
	25	<1.0	18	2.6	7.3	1.4
	30	2.1	72	8.7	43	5.3
	40	2.0	62	5.4	34	3.9
	50	1.8	108	13	39	9.9
	60	2.6	107	11	29	9.3

Note: Only VOCs detected are listed.

Note: Alternate sample designation are noted in parenthesis.

1,1-DCA = 1,1-Dichloroethane

1,1-DCE = 1,1-Dichloroethene

PCE = Tetrachloroethene

1,1,1-TCA = 1,1,1-Trichloroethane

TCE = Trichloroethene

**MARQUARDT COMPANY/FERRANTI INTERNATIONAL RCRA HAZARDOUS
WASTE TREATMENT & STORAGE FACILITY - SYNOPSIS AND PLANNED
ACTIONS BY THE STATE OF CALIFORNIA, CALIFORNIA ENVIRONMENTAL
PROTECTION AGENCY, DEPARTMENT OF TOXIC SUBSTANCES CONTROL**

The State of California, Department of Toxic Substances Control ("DTSC") will be issuing an Enforcement Order for Corrective Action ("Order") to The Marquardt Company, ("Marquardt"), 16555 Saticoy Street, Van Nuys, California 91406 (EPA ID No: CAD 044 696 102), and Ferranti International, Inc., 3725 Electronics Way, Lancaster, Pennsylvania 17604, a Delaware Corporation.

The Marquardt Company is the owner and operator of record of a hazardous waste management facility located at 16555 Saticoy Street, Van Nuys, California 91406 ("Facility"). Ferranti International, Inc. is the parent company for Marquardt.

The Facility is located adjacent to the Van Nuys Airport and its perimeter is bordered by the airport, industrial/business parks, small commercial businesses, and the Southern California Gas Company base. The nearest residential area would be the trailer park located to the west of Bull Creek and the residential homes located south, across Saticoy Street, which are removed from the Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and Hazardous waste storage and treatment units under the Resource Conservation and Recovery Act (RCRA units).

Permitting Status

The Facility formerly engaged in the management of hazardous waste pursuant to a grant of interim status issued by the Department of Health Services ("DHS"), which was DTSC's predecessor agency, on April 6, 1981. In December 1990, Marquardt filed a Part B permit application with DTSC to continue its hazardous waste storage and treatment activities. In August 1991, Marquardt withdrew its hazardous waste permit application and in February 1992, it submitted a closure plan to DTSC for review and approval. In September 1994, DTSC approved a closure plan for Marquardt.

Upon implementation of the approved closure plan, contamination was detected underneath the permitted units making the continued implementation of the approved closure plan infeasible since it prescribed removal of all contaminated soils to background levels.

On October 19, 1995 Marquardt submitted a Class 2 Closure Plan Modification request to allow it to close its regulated units to health-based levels instead of to background or non-detect levels as previously approved.

On December 21, 1995 the Department rejected Marquardt's Closure Plan Modification due to the failure to define the extent of contamination previously identified.

Jurisdiction

Jurisdiction exists pursuant to Health and Safety Code ("HSC") section 25187, which authorizes DTSC to issue administrative orders to require corrective action when DTSC determines that there is or has been a release of hazardous waste or hazardous waste constituents

into the environment from a hazardous waste facility. DTSC is also authorized to find that any violations of law related to provisions in the order which pose an imminent and substantial endangerment to the public health or safety or the environment.

Hazardous Wastes in Soils

In April 1991, DTSC conducted the first phase of a RCRA Facility Assessment, a Preliminary Review (RFA/PR). In January 1992, Kleinfelder conducted a soil vapor survey of the property leased by Kaiser Marquardt. On October 9, 1992, the United States Environmental Protection Agency (U.S. EPA) completed a Preliminary Assessment (PA) report. In September 1995, SCS Engineers submitted the, "Draft Baseline Health Risk Assessment Former RCRA Units, Marquardt Facility, 16555 Saticoy Street, Van Nuys, California, EPA ID No. CAD 044 696 102." This Health Risk Assessment predicted that migration of the contamination would be limited to shallow depths.

On February 15, 1996, the Department received a letter from Mr. Ken Lister of SCS Engineers. The letter showed that halogenated volatile organic compounds were detected in and around the vapor degreaser pit in Building 109. Trichloroethane (TCA) was detected at 12,800,000 micrograms per liter ($\mu\text{g/l}$), dichloroethane (DCA) was detected at 100 $\mu\text{g/l}$ and 1,570 $\mu\text{g/l}$ of dichloroethene (DCE) was found. Volatile organic contamination was detected in the bottom of all nine borings drilled, the deepest to 45 feet below ground surface (bgs). The letter proposed, "In order to mitigate contaminants present at the Facility SCS has recommended that a vapor extraction system be installed."

In March 1996 SCS Engineers submitted the data tables and maps from the previous soil vapor investigation of the part of the property now leased to the Kaiser/Marquardt Corporation performed by in 1992 by Kleinfelder & Associates. This investigation showed that significant and widespread distribution of contamination have been detected within the Kaiser/Marquardt leased section of the Marquardt Facility. Test Cell 1, Test Cell 9, the Precision Rocket Laboratory and Storage Area B are RCRA units located within this leased area.

On May 9, 1996, SCS Engineers submitted by fax a draft workplan for additional investigation at the Marquardt Facility. This Workplan included vertical soil vapor monitoring probes below 50 feet bgs; determination of the vertical extent of soils contaminated with hazardous wastes, and a contingency for conducting a groundwater investigation.

On the 10th and 11th of May 1996, undertook implementation of the May 9, 1996 Workplan without DTSC approval. The results of analyses for volatile organic compounds indicated: halogenated volatile organic compound contamination in the RCRA Storage Area A extended to at least 60 feet bgs, that consistently increasing concentrations with depth was present and that there was a strong likelihood of groundwater contamination. No semi-permanent soil vapor probes were installed below 50 feet bgs; the vertical extent of soils contaminated with hazardous wastes was not determined, and no groundwater investigation was conducted. The lithologic observations made from the continuously logged cores indicated that there is no laterally continuous lithology underlying the facility which would present a significant barrier to liquid or vapor transport to groundwater of the detected hazardous wastes.

On August 22, 1996 the DTSC Geological Services Unit issued another memorandum concluding that sampling of the vadose zone should be supplemented and groundwater sampling initiated to determine the complete nature and extent of the contamination.

On September 17, 1996, Marquardt submitted, "Data Summary Figures and Tables Marquardt Facility, Van Nuys, California," dated September 1996, and prepared by SCS Engineers for Ferranti International. This summary was based on data collected in the May 1996 additional soil vapor and soil sampling of selected RCRA regulated units and SWMUs. This summary showed the following results:

- RCRA Storage Area A is a source of vadose zone halogenated volatile organic compound contamination. Hazardous Waste Storage Area A has two soil boring locations (B19, B20) and four soil vapor phase locations (SV1, SV2, SV3, SV4) with data collected to a depth of 70 feet below ground surface (bgs). All of these sample locations showed tetrachloroethene (PCE) in soil matrix and soil vapor in every sample collected from 10 to 70 feet bgs. At all locations sampling was terminated with detectable concentrations of tetrachloroethene (PCE) in the deepest sample collected. In addition, two soil boring locations (B21, B22) sampled to 130 feet showed concentrations of tetrachloroethene (PCE) to 110 feet bgs. No deep soil vapor data was collected.
- In RCRA Hazardous Waste Storage Area B volatile organic compounds (toluene) are present in the deepest samples collected (three feet). No soil vapor data has been collected.
- RCRA Hazardous Waste Storage Area C has one soil boring location (B13) and two soil vapor locations (SV1, SV2) sampled to a depth of approximately 70 feet bgs. Every soil matrix and soil vapor sample in each of these locations from 10 to 70 feet bgs shows concentrations of tetrachloroethene (PCE). The soil vapor data also indicates the presence of 1,1,1-trichloroethane (1,1,1-TCA) and 1,1-dichloroethene (1,1-DCE) in every sample. At all locations sampling was terminated with concentrations of volatile organic compounds in the deepest samples collected. One soil boring (B14) was advanced to a depth of 130 feet bgs. Results indicate the presence of tetrachloroethene (PCE) to 100 feet and 1,1-Dichloroethene (1,1-DCE) to 130 feet. No deep soil vapor data has been collected.
- Hazardous Waste Storage Area D had one soil boring (B10) to a depth of 70 feet and two soil vapor locations (SV1, SV2) to a depth of 60 feet. Tetrachloroethene (PCE) was detected from 10 feet to the deepest samples collected in each location. All sampling locations were terminated with concentrations of tetrachloroethene (PCE), Trichloroethene (TCE), 1,1,1-Trichloroethane (1,1,1-TCA), 1,1-Dichloroethene (1,1-DCE), or 1,1-Dichloroethane (1,1-DCA) in the deepest samples. Results indicate the presence of Tetrachloroethene (PCE) at 90 feet bgs. No deep soil vapor data was collected.

In November 1996, the Facility submitted a, "Revised Draft Baseline Health Risk Assessment, Former RCRA Units," dated November 21, 1997. The Department had repeatedly directed Marquardt that a Health Risk Assessment could not be performed until the complete nature and extent of soil and groundwater contamination had been defined. The vadose zone modeling for the November 21, 1997 Health Risk Assessment predicted that migration of the

contamination to groundwater would not occur. Investigations undertaken by the Facility show that contamination is widespread both vertically and horizontally in soils, and that groundwater has been contaminated by the same hazardous constituents found in soils and managed at their facility. The complete nature and extent has yet to be defined.

The RFA/PR identifies 45 solid waste management units (SWMUs) and 40 areas of concern (AOCs); The U.S. EPA PA identifies six SWMUs AND numerous AOCs; the SCS Engineers survey of Building 109 identifies one SWMU; the Kleinfelder survey identifies several SWMUs located throughout the Kaiser Marquardt leased property; the SCS Engineers survey of the nine RCRA regulated units found contamination at each unit in the soil matrices and soil vapor; the SCS Engineers September 1996 summary of data from the May 1996 additional sampling and all other closure related sampling actions confirmed contamination at each RCRA regulated unit and several well known SWMUs and AOCs. All of these SWMUs, AOCs and RCRA regulated units have released or may release hazardous waste or hazardous waste constituents into the environment. The SWMUs, AOCs, and RCRA regulated units that are presently known are listed in the attachments to the soon to be released enforcement order for corrective action.

Based on the RFA/PR, U.S. EPA PA, numerous soil vapor and soil matrix sampling points, and closure soil sample analyses, DTSC concludes that further investigation is needed to determine the nature and extent of contamination at all presently known RCRA regulated units and at all presently known SWMUs and AOCs.

Hazardous Constituents in Groundwater

In August 1998 Marquardt submitted the "Groundwater Monitoring Well Installation and Sampling," which was conducted without DTSC review or approval. Data from the report indicate groundwater has been impacted by 15-150 micrograms per liter ($\mu\text{g/l}$) 1,1-dichloroethene (DCE), 8.8 $\mu\text{g/l}$ tetrachloroethene (PCE), and 7.8 $\mu\text{g/l}$ trichlorofluoromethane (TCFM). These concentrations of PCE and DCE are above drinking water Maximum Contaminant Levels of 5 $\mu\text{g/l}$ and 6 $\mu\text{g/l}$ respectively. Groundwater has not yet been analyzed for all the hazardous constituents found in soils and managed at the facility. There are four groundwater monitoring wells but no drinking water wells on the Facility.

Releases from the Facility have migrated to groundwater approximately 133 feet below the ground surface. Releases to groundwater from the Facility may migrate to down gradient drinking water supply wells in the North Hollywood, Verdugo, Erwin, Whittall, Headworks, Glendale and Pollock Well Fields in the San Fernando Basin. The lithology underlying the Facility is comprised primarily of silty sand and sand.

The halogenated volatile organic compounds believed to have been released from the facility are chemicals that are recognized by the State of California and the United States Environmental Protection Agency to be likely to cause real and immediate physical injury or result in adverse physical condition to one or more persons.

The release of these chemicals poses an imminent and substantial danger to drinking water supplies for the City of Los Angeles. The groundwater in the aquifer provides 15% of the water supply for the City of Los Angeles.

Hazardous wastes or hazardous waste constituents have migrated or may migrate from the Facility into the environment through the following pathways: groundwater, subsurface soils, surface drainage, run-off, and infiltration which can mobilize contamination.

Hazardous Constituents

The hazardous waste and hazardous waste constituents of concern at the Facility include but are not limited to hexavalent chromium, chromium, zinc chromate, chromium hydroxide, sodium dichromate, cadmium, cadmium hydroxide, cadmium oxide, mercury, lead, vanadium, sodium cyanide, nickel acetate, sodium hydroxide, sodium carbonate, sodium tetraborate chromic acid, bromic acid, nitric acid, hydrofluoric acid, hydrochloric acid, sulfuric acid, perchlorate, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), trichloroethene, xylenes, BTEX (benzene, toluene, ethylbenzene, xylene), dichlorodifluoromethane (Freon F-12), monochlorodifluoromethane (Freon 22), dichlorodifluoromethane (Freon 200), trichlorotrifluoroethane, trichlorofluoromethane, 1,1,1 trichloroethane, methylene chloride, paint thinner, acetone, isopropyl alcohol, butyl alcohol, butyl acetate, butanol, monomethanolamine, diethanolamine, triethanolamine, methyl isobutyl ketone, methyl cyclohexane, propyl bromide, bromopropane, monomethylhydrazine, exo-trimethylenenorborn (JP-10) nitrogen tetroxide, ethylene glycol, glycol ether, naphtha, triethyl borane, norbornadiene, methyl cyclopentadiene, polynuclear aromatic hydrocarbons (PAH) and ordnance residues, dinitrotoluene, or chemicals.

Work to be Performed

Based on the foregoing findings of fact the Marquardt Company will be required perform the following work required by the Order.

Interim Measures (IM)

Marquardt Company/Ferranti International will be required to evaluate available data and assess the need for interim measures in addition to those specifically required by the Order. Interim measures will be required be used whenever possible to control or abate immediate threats to human health and/or the environment, and to prevent and/or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

Current Conditions Report

Marquardt Company/Ferranti International will be required to submit a Current Conditions Report to DTSC in accordance with Section 3.3.1. of this Order. The Current Conditions Report will be required to contain an assessment of interim measures. The assessment must include other interim measures that could be implemented at the Facility in addition to those required by the Order. The assessment must also identify any additional data needed for making decisions on interim measures. These new data or information will be required be collected during the early stages of the RCRA Facility Investigation required by this Order. DTSC will review the Marquardt Company/Ferranti International's assessment and determine which interim

measures, in addition to those required by the Order, Marquardt Company/Ferranti International will be required to implement at the Facility. If deemed appropriate by DTSC, such determination may be deferred until additional data are collected.

Within sixty (60) days of the effective date of this Order, Marquardt Company/Ferranti International will be required to submit to DTSC a Workplan for the implementation of Interim Measures ("IM Workplan"). The IM Workplan is subject to approval by DTSC and will be required to provide for the performance of all Interim Measures necessary to achieve stabilization at the Facility.

In the event Marquardt Company/Ferranti International identifies an immediate or potential threat to human health and/or the environment, other than those outlined in this Order, discovers new releases of hazardous waste and/or hazardous waste constituents, or discover new solid waste management units not previously identified, Marquardt Company/Ferranti International will be required to notify the DTSC Project Coordinator orally within 48 hours of discovery and notify DTSC in writing within 10 days of discovery summarizing the findings, including the immediacy and magnitude of the additional potential threat to human health and/or the environment. In such an event, within thirty (30) days of receiving DTSC's written request, Marquardt Company/Ferranti International will be required to submit to DTSC an IM Workplan for approval.

All IM Work plans will be required to ensure that the Interim Measures are designed to mitigate current or potential threats to human health and/or the environment, and should, to the extent practicable, be consistent with the objectives of, and contribute to the performance of, any remedy which may be required at the Facility.

Concurrent with the submission of an IM Workplan, Marquardt Company/Ferranti International will be required to submit to DTSC a Health and Safety Plan. Concurrent with the submission of an IM Workplan, Marquardt Company/Ferranti International will be required to submit to DTSC a Community Profile for DTSC approval. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC may require Marquardt Company/Ferranti International to prepare a Public Participation Plan.

RCRA Facility Investigation (R.I.)

Marquardt Company/Ferranti International will be required to submit to DTSC a Current Conditions Report and a Workplan for a RCRA Facility Investigation ("RFI Workplan").

The RFI Workplan will be required to detail the methodology to: (1) gather data needed to make decisions on interim measures/stabilization, other than those required in this Order, during the early phases of the RCRA Facility Investigation; (2) identify and characterize all sources of contamination; (3) define the nature, degree and extent of contamination; (4) define the rate of movement and direction of contaminant flow; (5) characterize the potential pathways of contaminant migration; (6) identify actual or potential human and/or ecological receptors; and (7) support development of alternatives from which a corrective measure will be selected by DTSC. A specific schedule for implementation of all activities will be required to be included in the RFI Workplan.

Marquardt Company/Ferranti International will be required to submit a RFI Report to DTSC for approval in accordance with DTSC-approved RFI Workplan schedule. If there is a phased investigation, separate RFI Reports and a report that summarizes the findings from all phases of the RFI must be submitted to DTSC. DTSC will review the RFI Report(s) and notify

Marquardt Company/Ferranti International in writing of DTSC's approval or disapproval. Marquardt Company/Ferranti International will revise or append the RFI reports in accordance with comments from DTSC.

Marquardt Company/Ferranti International will be required to submit a RFI Summary Fact Sheet to DTSC that summarizes the findings from all phases of the RFI. The RFI Summary Fact Sheet will be required to be submitted to DTSC in English and in Spanish. When DTSC approves the RFI Summary Fact Sheet, Marquardt Company/Ferranti International will be required to mail the approved RFI Summary Fact Sheet to all individuals on the Facility mailing list established pursuant to 22 California Code of Regulations, section 66271.9(c)(1)(D), within fifteen (15) calendar days of receipt of written approval.

Concurrent with the submission of a RFI Workplan, Marquardt Company/Ferranti International will be required to submit to DTSC a Community Profile for DTSC approval. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC may require Marquardt Company/Ferranti International to prepare a Public Participation Plan.

Corrective Measures Study (CMS)

Marquardt Company/Ferranti International will be required to prepare a Corrective Measures Study if contaminant concentrations remaining after implementation of Interim Measures exceed current health-based action levels and/or if DTSC determines that the contaminant releases pose a potential threat to human health and/or the environment.

The CMS Workplan will be required to detail the methodology for developing and evaluating potential corrective measures to remedy any contamination at the Facility. The CMS Workplan will be required to identify the potential corrective measures, including any innovative technologies, that may be used for the containment, treatment, remediation, and/or disposal of contamination.

Marquardt Company/Ferranti International will be required to prepare treatability studies for all potential corrective measures that involve treatment except where Marquardt Company/Ferranti International can demonstrate to DTSC's satisfaction that they are not needed. The CMS Workplan will be required to include, at a minimum, a summary of the proposed treatability study including a conceptual design, a schedule for submitting a treatability study workplan, or Marquardt Company/Ferranti International's justification for not proposing a treatability study. Marquardt Company/Ferranti International will be required to submit a CMS Report to DTSC for approval.

Remedy Selection

DTSC will provide the public with an opportunity to review and comment on the final draft of the CMS Report, DTSC's proposed corrective measures for the Facility, and DTSC's justification for selection of such corrective measures.

Following the public comment period, DTSC may select final corrective measures or require Marquardt Company/Ferranti International to revise the CMS Report and/or perform additional corrective measure's studies.

DTSC will notify Marquardt Company/Ferranti International of the final corrective measures selected by DTSC in the Final Decision and Response to Comments. The notification will include DTSC's reasons for selecting the corrective measures.

Corrective Measures Implementation (CMI)

Marquardt Company/Ferranti International will be required to submit to DTSC a

Corrective Measures Implementation (CMI) Workplan. The CMI Workplan is subject to approval by DTSC.

Concurrent with the submission of a CMI Workplan, Marquardt Company/Ferranti International will be required to submit to DTSC a Community Profile for DTSC approval. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC may require Marquardt Company/Ferranti International to prepare a site specific Public Participation Plan and a Cumulative Health Risk Assessment.

Monthly Progress Reports

Marquardt Company/Ferranti International will be required to provide DTSC with monthly progress reports of corrective action activities conducted.

History

The Marquardt Company has operated a research, development and manufacturing facility for the aerospace and related industries at 16555 Saticoy Street, Van Nuys, California since 1944. The facility is immediately west of the Van Nuys Airport.

Marquardt applied for Interim Status in 1980 and filed a Part B Permit Application on November 8, 1988. The wastes handled at the Marquardt Company were generated on-site as part of their manufacturing and testing processes. The 1980 Part A Application and the Interim Status Document specify storage only, although the facility had been doing treatment of hazardous waste apparently since before 1980. The facility's manufacturing processes include fabricating, cleaning and coating metal parts. The facility also tested rocket and ramjet engines.

The 1984 RCRA amendments provide authority to EPA and states authorized by EPA to require comprehensive corrective action on solid waste management units (SWMU's) and other areas of concern at the facilities that have Interim Status and are applying for a final Hazardous Waste Facility Permit (Part B). This authority is intended to address previously unregulated releases of hazardous constituents to air, surface water, soil, groundwater, and also the generation of subsurface gas. To achieve this objective, the RCRA Facility Assessment (RFA) was performed by the Department of Toxic Substances Control (formerly known as the Toxic Substances Control Program of the State of California Department of Health Services). The "RCRA Facility Assessment, Preliminary Review, The Marquardt Company, April 1991,"

The Marquardt Company is located on a 56.16 acre site at 16555 Saticoy Street, Van Nuys, California 91406, immediately west of the Van Nuys Airport and within the City of Los Angeles.

The Marquardt Company was an aerospace research, development and manufacturing company. Its products fell into several related fields; aero propulsion, rocket, ordnance and turbo projects. Aero propulsion systems are the outgrowth of research efforts begun in 1944 to develop a practical ramjet engine for subsonic targets. This work led to the development of supersonic ramjets in the 50's and subsequently to the supersonic combustion ramjets (scramjets) for future high speed atmospheric vehicles. Marquardt developed liquid and gaseous propulsion systems in 1958 and provided on-site test facilities for rocket systems, engines and components. It

manufactured metal parts and components for aircraft and aerospace vehicles. Rocket engines were manufactured on-site which have a thrust range of 1/10 to 2000 lb/ft. Marquardt also produced ordnance systems for the military. These included cluster bombs, hand-held assault weapons, cluster mines and other assemblies for dispensing these products. The turbo system line included both air and fuel powered turbines to provide hydraulic, electrical or mechanical power in airborne systems.

The combination of Marquardt's ramjet technology and its rocket engine test facilities led to the studies to determine the feasibility of utilizing its "Sudden Expansion Burner" as an incinerator. From 1972 to at least 1975 studies were performed for the EPA, APCD and the military to test the incinerator's capabilities to destroy a variety of materials ranging from pesticides to Agent Orange. The destruction efficiency ranged from 99.9% for solvents to 99.9999% for Agent Orange. A grant to test the unit's ability to incinerate a variety of hazardous waste was ultimately withdrawn by the State of California in response to objections from the local community.

Facility Location

Marquardt Company/Ferranti International is located within the city limits of Los Angeles, California and occupies approximately 56 acres. The Marquardt Company is located at 16555 Saticoy Street adjacent, to the Van Nuys Airport in the San Fernando Valley. It is surrounded by the Airport, Air National Guard, trailer Parks, as well as heavy and light industrial, commercial and residential developments.

Hydrogeology/Geology

The facility is located in the San Fernando Valley, a broad fairly flat plain bounded on the north by the San Gabriel Mountains, and Santa Susana Mountains, on the west by the Simi Hills, on the south by the Santa Monica Mountains, and on the east by the Verdugo Mountains. The site lies at an elevation of approximately 773 feet above mean sea level. The geology in the vicinity of the plant is a Recent alluvium consisting of poorly sorted, unconsolidated, coalescing alluvial fan deposits of sand, gravel, and clay. These deposits are generally undissected and undeformed. The Van Nuys facility is underlain by sand, silt, and clay fluvial sequences to a depth of at least 1-25 feet below ground surface (bgs). The soil in the region has a moderate conductivity of $3.5E-05$ to $2.0E-04$ centimeters per second. In the area of the site, Quaternary alluvium extends to a depth of roughly 800 feet bgs. Beneath the alluvium is the Modelo Formation, an upper Miocene series of marine conglomerates and fine- to coarse-grained sandstones interbedded with diatomaceous shales. The Modelo Formation is underlain by the Topanga Formation, a mid- to lower-Miocene formation composed of coarse marine and continental sandstones and conglomerates that interbedded with andesite and basalt flows.

The site is within the San Fernando Basin, the largest of four ground-water basins in the Upper Los Angeles River Area (ULARA). The San Fernando Basin covers an area of approximately 122,000 acres and has a storage capacity of roughly 3.2 million acre-feet of groundwater. Most of this storage is within the basin's Quaternary alluvial deposits, which can yield over 2000 gallons

per minute (gpm).

Recent Alluvium beneath Marquardt Company/Ferranti International includes silty sand with discontinuous thin (>5 feet thick) clayey layers gradually becoming more sandy with depth until ultimately becoming a clean medium sand close to groundwater depths (~150 feet below ground surface [bgs]). In the area of Marquardt Company/Ferranti International the principal aquifer is in hydraulic continuity with the surface. No structural or lithologic barriers have been observed which could act as barriers to vapor or advective flow of contamination in the vadose zone to the groundwater.

The formations beneath the Quaternary and Recent Alluvium, the Modelo and Topanga, each have a yield of less than 100 gpm and are considered non-waterbearing rocks.

Most of the production wells within the San Fernando Valley Basin are in the eastern part of the valley, where sand and gravel aquifers were deposited by large streams issuing from the basement rocks of the San Gabriel Mountains. Within the general vicinity (approximately 2.5 miles downgradient) of the Marquardt Facility are the North Hollywood, Whitnall, Rinaldi-Toluca, and Tujunga Well Fields. These drinking water production well fields are operated by the Los Angeles Department of Water and Power. The first principal aquifer beneath the Marquardt facility is approximately 133 feet bgs and flows towards the well fields to the southeast.

The Upper Los Angeles River Area (ULARA) Watermaster was contacted to identify depth to first groundwater information, regional groundwater flow direction, analytical results from groundwater samples from the nearest drinking water wells and distance to those wells.

The regional groundwater flow direction is generally to the east to southeast but may vary locally due to pumping. The nearest water supply wells are at the North Hollywood, Erwin, Headworks, and Tujunga Well Fields, located east and north of the Facility.

The Facility will be required to obtain the well: screened interval, pump rate and type, construction details including annular seals and location of all monitoring, agricultural, industrial or drinking water supply wells within a one-mile radius of the Facility. The following agencies' records will be researched to obtain this data: State of California, Department of Water Resources, ULARA Watermaster, Los Angeles County Department of Public Works, Monitoring Well Section, Department of Health Services, Office of Drinking Water.

Topography/Surface Water

Local topography slopes southward parallel to Bull Creek toward the Los Angeles River. Within a one mile radius of the site, the only surface water resources are stream flows in Bull Creek. These washes are tributary to the Los Angeles River. There are no other streams, wells, lakes, aqueducts, etc. known in this area. During plant operations, the facility's stormwater is discharged to the Bull Creek under a National Pollutant Discharge Elimination System (NPDES) stormwater permit.

The Federal Insurance Administration (FIA) flood maps, City of Los Angeles California, Los Angeles County, Panel 29 of 112, Community Panel Number 0601 37-0029C, lists the Marquardt Van Nuys facility in Zone "C," areas of minimal flooding, outside the areas of 500-year flood boundary.

If there are any questions or comments please call Andres Cano at (714) 484-5421.

APPENDIX E

STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

In the Matter of:

Docket No. HWCA 98/99-3015

The Marquardt Company
16555 Saticoy Street
Van Nuys, California 91406
[EPA ID No: CAD 044 696 102]

**ENFORCEMENT ORDER FOR
CORRECTIVE ACTION**

Health and Safety Code Section 25187

Ferranti International, Inc.
3725 Electronics Way
Lancaster, Pennsylvania 17604

Respondents.

INTRODUCTION

1.1. Parties. The California Environmental Protection Agency, Department of Toxic Substances Control ("DTSC") issues this Enforcement Order for Corrective Action ("Order") to The Marquardt Company ("Marquardt"), 16555 Saticoy Street, Van Nuys, California 91406 (EPA ID No: CAD 044 696 102), a Delaware Corporation; to Ferranti International, Inc., 3725 Electronics Way, Lancaster, Pennsylvania 17604, a Delaware Corporation.

1.1.1. Respondent Marquardt is the owner and operator of record of a hazardous waste management facility located at 16555 Saticoy Street, Van Nuys, California 91406 ("Facility").

1.1.2. Respondent Ferranti International, Inc. is the parent company for Marquardt.

1.2. Permitting Status. The Facility formerly engaged in the management of hazardous waste pursuant to a grant of interim status issued by the Department of Health Services ("DHS"), which was DTSC's predecessor agency, on April 6, 1981. In December 1990, Marquardt filed a Part B permit application with DTSC to continue its hazardous waste storage and treatment activities. In August 1991, Marquardt withdrew its hazardous waste permit application and in February 1992, it submitted a closure plan to DTSC for review and approval. In September 30, 1994, DTSC approved a "clean" closure plan for Marquardt which was subject to the premise that

1 closure activities would be implemented as specified in the approved "clean" closure document and
2 the "Response to Public Comments" document. The approved "clean" closure plan required the
3 removal of all contaminated soils to background or non-detect levels. The "clean" closure plan was
4 implemented by Marquardt and contamination was detected underneath the permitted units. The
5 presence of contamination beneath the permitted units caused the Facility to re-evaluate its ability to
6 meet the approved "clean" closure performance standards of background or non-detect levels.

7 On October 19, 1995 and January 6, 1997, Marquardt submitted a Class 2 closure plan
8 modification request to allow it to close its regulated units to health risk based levels instead of to
9 background or non-detect levels as previously approved. A draft health risk assessment document
10 with vadose zone modeling was submitted on both occasions. On December 21, 1995 and March 13,
11 1997, DTSC rejected Marquardt's closure plan modification requests due to Marquardt's failure to
12 define the extent of contamination identified in either version of the health risk assessment and
13 vadose zone model.

14 1.3. Jurisdiction. Jurisdiction exists pursuant to Health and Safety Code ("HSC") section
15 25187, which authorizes DTSC to issue administrative orders to require corrective action when
16 DTSC determines that there is or has been a release of hazardous waste or hazardous waste
17 constituents into the environment from a hazardous waste facility. DTSC is also authorized to find
18 that any violations of law related to provisions in this order pose an imminent and substantial
19 endangerment to the public health or safety or the environment.

20 1.4. Definition of Terms. The terms used in this Order are as defined in Title 22, California
21 Code of Regulations (22 CCR), section 66260.10, except as otherwise provided.

22 **FINDINGS OF FACT**

23 **2.1. Description of Facility**

24 2.1.1. Nature of Facility. The Facility was a large aerospace and defense contract
25 facility that manufactured components and assemblies for aircraft, missiles, space and ordnance
26 applications. The Facility formerly consisted of metal machining centers, assembly areas, plating
27
28

1 lines and test areas for small rocket engines. Hazardous waste storage and treatment units were
2 operated in support of the Facility's chemical usage in cleaning, surface preparations, or painting of
3 metal parts. Several treatment units were used as air pollution control devices for rocket engine
4 testing areas.

5 2.1.2. Facility Size, Layout and Operations. The Facility is located at the intersection
6 of Hayvenhurst Avenue and Saticoy Street in Van Nuys, California. The Facility encompasses
7 approximately 56 acres of land that lies adjacent to the western border of the Van Nuys Airport. The
8 nearest residential areas to the Facility are the trailer parks located less than 1000 feet west of the
9 western border of Marquardt's property. Other residential developments are also located less than
10 1000 feet south of the southern most boundary of Marquardt's property, which is Saticoy Street. A
11 site location map of the Van Nuys area in which the Facility is located is attached hereto and
12 incorporated herein as Attachment 1.

13 2.1.3. Property Boundaries. The Facility is located at Latitude 34° 12' 48" North,
14 Longitude 118° 29' 37" West; within Township 2 North, Range 15 West, Section 31 of the San
15 Bernardino Baseline and Meridian.

16 2.1.4. Current and Past Uses of Units. Before 1944, the property was used for
17 agriculture with two small clusters of buildings developed before 1928. In 1944, Marquardt Aircraft
18 began its use of the property. The U.S. Government owned the northern portion of the site and used
19 it as a military compound for officers and troops. Prior to 1963, Marquardt purchased the northern
20 portion of the site and by 1968 most of the existing facility was constructed and operated by
21 Marquardt.

22 In November 1980, Marquardt submitted to the U.S. EPA a RCRA Part A application for
23 storage of hazardous wastes in drums and tanks. On April 6, 1981, DHS issued to Marquardt a grant
24 of interim status for its storage of hazardous wastes. In April 1989, Marquardt submitted a second
25 Part A application for treatment of hazardous wastes in tanks, these tanks being its air scrubbers. A
26 third Part A application was submitted in December 1990 in order to add two lamella settlers to the
27 list of treatment units. In total, Marquardt has been granted interim status for 11 RCRA units, one of
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1 which was a former underground waste oil tank that had been removed back in March 1988 but
2 never went through RCRA closure. There were four formal hazardous waste storage areas, three
3 treatment units that were used as air pollution control devices for rocket engine testing, and three
4 treatment units for plating operations wastes, neutralization and wastewater treatment prior to
5 discharge to the sewer system. A Facility location map which identifies the 11 RCRA units is
6 attached hereto and incorporated herein as Attachment 2.

7 The following hazardous waste storage and treatment units were operated in support of the
8 Facility's chemical usage in cleaning, surface preparations, painting of metal parts, metal machining,
9 assembly, plating and test areas for small rocket engines:

10 Underground Waste Oil Tank. This tank was located beneath Hazardous Waste Storage Area
11 (HWSA D) and was made of steel with a capacity of 5,000 gallons. This tank was removed on
12 March 16, 1988 with soil contamination found from sampling in the vicinity of the tank. Hazardous
13 constituents which were found in the soil matrix back in March 1988 included tetrachloroethane,
14 1,1,1-Trichloroethylene, toluene, xylene, total petroleum hydrocarbons (TPH), diesel fuel and
15 chromium. In July 1988, under approval of the Los Angeles County Department of Health Services
16 an unknown quantity of soil was removed from the tank area and disposed of as non-RCRA
17 hazardous waste. Sampling and excavation continued until the concentrations of 6.4 mg/kg of
18 chromium, 54 mg/kg of lead, and non-detect levels of TPH were achieved. The area was backfilled,
19 graded and an asphalt surface installed.

20 Hazardous Waste Storage Area A (HWSA A). This unit was located south of the southwest
21 corner of Building 104 and was divided into three sections: north, middle, south. The actual
22 hazardous waste storage area was located in the northern section of the unit and consisted of a
23 concrete containment system measuring 50' L x 35' W x 0.5' H with a sloped floor. HWSA A was
24 enclosed by a fence that included the middle section of the unit. HWSA A generally stored solvents,
25 sludges, plating solutions, ignitable wastes, corrosive wastes and reactive wastes.

26 HWSA B. This unit was located south of Building 55 and adjacent to the southern boundary
27 of the facility. This unit measures 24' x 40' with a concrete floor and a below grade concrete
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1 containment area with concrete sides 15 to 18 inches high. The concrete floor was sloped towards a
2 25 gallon dead-end sump located in the southeast corner of the unit. This unit was used to store both
3 raw materials and ignitable hazardous wastes and had a capacity to store approximately 30 drums.
4 This unit also has a metal roof and partial walls which extend from the roof to approximately 7 feet
5 above the concrete floor surface.

6 HWSA C. This unit was located southwest of Building 114, near Stagg Street and Ruffner
7 Avenue. The unit measured 48' X 35' and was used to store raw flammable materials but was listed
8 in the 1980 Part A and became a RCRA regulated unit. The unit consisted of a concrete pad with
9 concrete block walls and a full roof. In June 1988 the unit was taken out of service due to
10 demolition of Building 65 with grading for the construction of Building 115. Composite soil
11 sampling from HWSA C showed TPH contamination of 800 mg/kg. In August 1988, under
12 approval of the Los Angeles County Department of Health Services, approximately 15 cubic yards
13 of soil was removed from HWSA C's area and disposed as non-RCRA hazardous waste. The soil
14 removal was stopped when the TPH concentration was below 70.0 mg/kg.

15 HWSA D. This unit was located above a former underground waste oil tank, east of
16 Buildings 115 and 116. This hazardous waste storage unit failed to undergo proper RCRA closure
17 when the underground waste oil tank was removed in March 1988 and the concrete and asphalt
18 sections of the hazardous waste storage area were removed in order to access the underground tank.
19 HWSA D consisted of a concrete pad and asphalt pad, divided and surrounded by a 6 inch high
20 concrete curb. It had no roof but might have been surrounded by a chain-link fence. The volume
21 capacity of the two sections of the unit were approximately 3,800 and 6,400 gallons. Based upon the
22 November 1980 Part A application, a variety of wastes were stored in this unit including but not
23 limited to solvents, sludges, plating solutions, quenching sludges and solutions, ignitable wastes and
24 corrosive wastes.

25 Rocket Test Cell 1 (Test Cell 1). This unit is located within the Kaiser Marquardt leased
26 portion of the Marquardt site in the vicinity of Buildings 10 and 11. This unit consists of two fuel
27 scrubber tanks and two oxidizer scrubber tanks which previously received waste rocket fuel and
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oxidizer from the rocket test operations. The fuel scrubber tanks contained sodium hypochlorite scrubber solutions and packing rings to treat excess fuel which consisted of hydrazine or monomethylhydrazine. The oxidizer scrubber tanks contained sodium sulfite and packing rings to destroy the residual oxidizer solution of nitrogen tetroxide. Test Cell 1's fuel scrubber tanks consisted of one 700-gallon tank and one 450-gallon tank. The oxidizer scrubber tanks were 700 and 500 gallons in capacity. These tanks and their associated equipment were located directly on concrete slabs. The containment system for Test Cell 1 consisted of a second tank built completely around each of the fuel scrubber tanks. The oxidizer scrubber tanks did not have any spill containment.

Rocket Test Cell 9 (Test Cell 9). This unit is located within the Kaiser Marquardt leased portion of the Marquardt site in the vicinity of Building 9. This unit consists of one 300-gallon fuel scrubber tank and one 300-gallon oxidizer scrubber tank. Both of the tanks are located in a 5.5-foot deep concrete vault which provided containment for the entire test cell. The containment area is 19 feet wide by 24 feet long with a capacity of 18,760 gallons. The fuel and oxidizer scrubber tanks at this unit contained the same chemicals as Test Cell 1's scrubber tanks and treated the same types of excess fuels as Test Cell 1.

Rocket Test PRL. This unit is located within the Kaiser Marquardt leased portion of the Marquardt site on the east side of Building 92. This unit consists of one 350-gallon fuel scrubber tank and one 400-gallon oxidizer scrubber tank. Both of the tanks are located directly on concrete slabs. The fuel scrubber tank had a secondary containment system which consisted of a second tank built completely around it and the oxidizer scrubber tank did not have a secondary containment system. The fuel and oxidizer scrubber tanks at this unit contained the same chemicals as Test Cell 1 and 9's scrubber tanks and treated the same types of excess fuels as Test Cell 1 and 9.

Treatment 109. This unit was located just outside the north wall of Building 109 in a covered area with concrete berms. The unit consisted of one 1500-gallon chromium holding tank, one 1,000-gallon sludge settling tank, one 2000-gallon neutralization tank, one 1500-gallon Lamella settler,

two deionized water storage tanks and one filter press. Treatment 109 was used to treat chromic acid rinsewaters from the plating process units located in Buildings 3, 31, 101, and 109.

Treatment 101. This unit is located outside and west of Building 101 on an asphalt covered area. Treatment 101 was generally used for batch neutralization and oil/coolant separation. Occasionally, it was used to treat cadmium cyanide and hexavalent chromium wastes as well. The wastes treated in this unit were generated by rocket testing in the form of fuel and oxidizer scrubber wastes and metal finishing processes in the form of acids, caustics, cadmium cyanide, hexavalent chromium and oil coolant. This unit consisted of two 2000-gallon aboveground steel treatment tanks and a portable filter press. Both tanks were elevated on wooden and steel beams above a concrete lined containment area with one-foot high berms and a sump.

Treatment 115. This unit is located just outside the north wall of Building 115. The unit was designed to treat wastewaters and wastes from process and production areas but according to Marquardt representatives, it was never operated. A signed and written certification attesting to this fact was presented as Attachment 2-9 of the approved closure plan. Treatment 115 consisted of two 1200-gallon treatment tanks, three 2000-gallon treatment tanks, a 1500-gallon settler and a filter press.

2.2. Release(s) of Hazardous Waste. Hazardous waste and/or hazardous waste constituents have been released and continue to be released into the environment from the Facility. Examples of these releases, including reports of direct observations, test data and operational practices, which are merely illustrative and not intended to be a comprehensive list, are noted below.

2.2.1. RCRA Facility Assessment/Preliminary Review, April 1991. In April 1991, DTSC conducted only the preliminary review ("PR") portion of a RCRA Facility Assessment ("RFA"). The PR indicated that the myriad of activities conducted by Marquardt may have resulted in the release of hazardous wastes or hazardous materials constituents into the environment from the facility. The PR identifies 45 solid waste management units ("SWMU") and 40 areas of concern (40) that either have released or may release hazardous waste or hazardous waste constituents into the environment. A list of the RCRA regulated units is attached hereto and incorporated herein as

1 Attachment 3. A list of the SWMUs and AOCs from the RFA/PR are attached hereto and
2 incorporated herein as Attachment 4.

3 2.2.2. Soil Vapor Survey of Kaiser-Marquardt Property, January 1992. In January
4 1992 a consulting firm, Kleinfelder, Inc., conducted a soil vapor survey of The Marquardt Company.
5 This investigation showed that significant and widespread distribution of contamination had been
6 detected in the soil matrix within the Kaiser-Marquardt leased section of the Facility. Test Cell 1,
7 Test Cell 9, the Precision Rocket Laboratory and Hazardous Waste Storage Area B are RCRA units
8 located within the leased area and contamination was found beneath these regulated units.
9 Contamination was also found beneath many other SWMUs and AOCs, which were not at or near a
10 RCRA unit. A list of the SWMUs and AOCs from this soil vapor investigation are attached hereto
11 and incorporated herein as Attachment 4.

12 2.2.3. U.S. EPA Preliminary Assessment, October 9, 1992. In October 1992, the U.S.
13 EPA completed a Preliminary Assessment (PA) report of the Facility. The PA identified 6
14 significant SWMUs, five of which are RCRA regulated units, and numerous AOCs which will need
15 investigation. A list of SWMUs and AOCs from the PA report are attached hereto and incorporated
16 herein as Attachment 4.

17 2.2.4. Draft Baseline Health Risk Assessment, September 1995. In September 1995,
18 Marquardt consultant SCS Engineers submitted the, "Draft Baseline Health Risk Assessment Former
19 RCRA Units, Marquardt Facility, 16555 Saticoy Street, Van Nuys, California, EPA ID No. CAD
20 044 696 102." This draft Health Risk Assessment predicted that migration of contamination found
21 at the Facility would be limited to shallow depths. DTSC did not approve this draft Health Risk
22 Assessment nor the closure plan modification that had been requested.

23 2.2.5. Building 109, SCS Engineers Letter to DTSC, February 15, 1996. On
24 February 15, 1996, DTSC received a letter from Mr. Ken Lister of SCS Engineers. The letter and its
25 attachments showed that halogenated volatile organic compounds were detected in and around the
26 vapor degreaser pit in Building 109. Trichloroethane (TCA) was detected at a depth of 10 feet below
27 ground surface (bgs) with a concentration of 12,800,000 micrograms per liter ($\mu\text{g/l}$), dichloroethane
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1 (DCA) was detected at a depth of 15 feet bgs with a concentration of 100 µg/l and dichloroethene
2 (DCE) was detected at a depth of 20 feet bgs with a concentration of 1570 µg/l. Halogenated and
3 non-halogenated volatile organic compound contamination was detected in the bottom of all nine
4 borings drilled during this particular investigation with the deepest boring extending to 45 feet bgs.
5 The letter proposed, "In order to mitigate contaminants present at the Facility SCS has recommended
6 that a vapor extraction system be installed."

7 2.2.6. Draft Workplan for Additional Investigation, May 1996. On May 9, 1996,
8 SCS Engineers submitted via facsimile, a Draft Workplan for additional investigation at the Facility.
9 This workplan included vertical soil vapor monitoring probes deeper than 50 feet bgs; determination
10 of the vertical extent of soils contaminated with hazardous wastes and a contingency for conducting
11 a groundwater investigation. The May 9, 1996, Draft Workplan was not approved by DTSC.

12 On the 10th and 11th of May 1996, Marquardt undertook implementation of the May 9, 1996
13 workplan without DTSC approval. The results of analyses for volatile organic compounds indicated
14 halogenated volatile organic compound contamination in the RCRA Hazardous Waste Storage Area
15 A extended to at least 60 feet bgs, that consistently increasing concentrations with depth was present
16 and that there was a strong likelihood of groundwater contamination. No semi-permanent soil vapor
17 probes were installed below 50 feet bgs; the vertical extent of soils contaminated with hazardous
18 wastes was not determined, and no groundwater investigation was conducted. The lithologic
19 observations made from the continuously logged cores indicated that there is no laterally continuous
20 lithology underlying the facility which would present a significant barrier to liquid or vapor transport
21 to groundwater of the detected hazardous wastes.

22 2.2.7. DTSC Memorandum on May 1996 Draft Workplan, August 1996. On August
23 22, 1996 the DTSC Geological Services Unit issued a memorandum in response to the May 9, 1996
24 Draft Workplan for additional sampling activities. This memorandum concluded that sampling of
25 the vadose zone should be supplemented and groundwater sampling initiated to determine the
26 complete nature and extent of contamination at the Facility.

2.2.8. Data Summary of Additional Soil Sampling, September 1996. On September 17, 1996, Marquardt submitted, "Data Summary Figures and Tables Marquardt Facility, Van Nuys, California", dated September 1996, and prepared by SCS Engineers for Ferranti International. This summary was based on data collected in the May 1996 additional soil vapor and soil sampling of selected RCRA regulated units and SWMUs. This summary showed the following results:

- RCRA Hazardous Waste Storage Area A is a source of vadose zone halogenated volatile organic compound contamination. Hazardous Waste Storage Area A has two soil boring locations (B19, B20) and four soil vapor phase locations (SV1, SV2, SV3, SV4) with data collected to a depth of 70 feet bgs. All of these sample locations showed tetrachloroethene (PCE) in soil matrix and soil vapor in every sample collected from 10 to 70 feet bgs. At all locations sampling was terminated with detectable concentrations of tetrachloroethene (PCE) in the deepest sample collected. In addition, two soil boring locations (B21, B22) sampled to 130 feet showed concentrations of tetrachloroethene (PCE) to 110 feet bgs. No deep soil vapor data was collected.
- In RCRA Hazardous Waste Storage Area B volatile organic compounds (toluene) are present in the deepest samples collected (three feet). No soil vapor data has been collected.
- RCRA Hazardous Waste Storage Area C has one soil boring location (B13) and two soil vapor locations (SV1, SV2) sampled to a depth of approximately 70 feet bgs. Every soil matrix and soil vapor sample in each of these locations from 10 to 70 feet bgs shows concentrations of tetrachloroethene (PCE). The soil vapor data also indicates the presence of 1,1,1-trichloroethane (1,1,1-TCA) and 1,1-dichloroethene (1,1-DCE) in every sample. At all locations sampling was terminated with concentrations of volatile organic compounds in the deepest samples collected. One soil boring (B14) was advanced to a depth of 130 feet bgs. Results indicate the presence of tetrachloroethene (PCE) to 100 feet and 1,1-Dichloroethene (1,1-DCE) to 130 feet. No deep soil vapor data has been collected.
- RCRA Hazardous Waste Storage Area D had one soil boring (B10) to a depth of 70 feet and two soil vapor locations (SV1, SV2) to a depth of 60 feet. Tetrachloroethene (PCE) was

1 detected from 10 feet to the deepest samples collected in each location. All sampling
2 locations were terminated with concentrations of tetrachloroethene (PCE), Trichloroethene
3 (TCE), 1,1,1-Trichloroethane (1,1,1-TCA), 1,1-Dichloroethene (1,1-DCE), or 1,1-
4 Dichloroethane (1,1-DCA) in the deepest samples. Results indicate the presence of
5 Tetrachloroethene (PCE) at 90 feet bgs. No deep soil vapor data was collected.

6 2.2.9. Revised Draft Baseline Health Risk Assessment, November 1996. In January
7 1997, the Facility submitted to DTSC a, "Revised Draft Baseline Health Risk Assessment, Former
8 RCRA Units," dated November 21, 1996. DTSC had repeatedly directed Marquardt that a Health
9 Risk Assessment could not be performed until the complete nature and extent of soil and
10 groundwater contamination had been defined. The vadose zone modeling for the November 21,
11 1996 Health Risk Assessment predicted that migration of the contamination to groundwater would
12 not occur. This revised Health Risk Assessment and associated closure plan modification were
13 found to be inadequate and were disapproved by DTSC on March 13, 1997.

14 2.2.10. Groundwater Monitoring Report, July 1998. In July 1998, Marquardt
15 submitted the "Groundwater Monitoring Well Installation and Sampling" report (Groundwater
16 Report). The activities identified in this report were conducted without DTSC review or approval.
17 Groundwater elevation was measured to be at a depth of approximately 133 feet bgs. Data from the
18 report indicate groundwater has been impacted by 15-150 micrograms per liter ($\mu\text{g/l}$)
19 1,1-dichloroethene (DCE), 8.8 $\mu\text{g/l}$ tetrachloroethene (PCE), and 7.8 $\mu\text{g/l}$ trichlorofluoromethane
20 (TCFM). These concentrations of PCE and DCE are above drinking water Maximum Contaminant
21 Levels (MCL) of 5 $\mu\text{g/l}$ and 6 $\mu\text{g/l}$, respectively. Groundwater has not yet been analyzed for all of the
22 hazardous constituents found in soils and managed at the Facility.

23 2.3. Hazardous wastes or hazardous waste constituents have migrated and continue to
24 migrate from the Facility into the environment through the following pathways:

25 2.3.1. Soil surface and Vadose Zone. The RFA/PR, soil vapor survey, Groundwater
26 Report and all other investigations cited above have shown that contamination is widespread both
27 vertically and horizontally in soils throughout the Facility. In addition to the SWMUs and AOCs
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1 identified in the RFA/PR and PA, areas for further investigation and characterization identified by
2 other documents in the record include many non-RCRA regulated buildings, equipment or activities
3 or the areas that were formerly occupied by demolished or removed buildings, equipment or
4 activities. The evidence cited above suggests that interim measures are necessary to control and
5 contain ongoing and future releases during investigation and implementation of corrective action.

6 2.3.2. Groundwater. The Groundwater Report, soil vapor survey and all other
7 investigations or reports cited above have shown that groundwater has been contaminated by the
8 same hazardous constituents found in soils and managed at the Facility. Groundwater has not yet
9 been analyzed for all of the hazardous constituents of concern that were managed at the Facility.
10 The complete nature and extent of the soil and groundwater contamination has yet to be determined.
11 DTSC has cause to believe that releases may be ongoing, and that interim measures are necessary to
12 immediately control and contain ongoing releases and prevent future releases during investigation
13 and implementation of corrective action.

14 2.4. The hazardous waste and hazardous waste constituents of concern at the Facility
15 include but are not limited to hexavalent chromium, chromium, zinc chromate, chromium hydroxide,
16 sodium dichromate, cadmium, cadmium hydroxide, cadmium oxide, mercury, lead, vanadium,
17 sodium cyanide, nickel acetate, sodium hydroxide, sodium carbonate, sodium tetraborate chromic
18 acid, bromic acid, nitric acid, hydrofluoric acid, hydrochloric acid, sulfuric acid, perchlorate,
19 tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE),
20 1,1-dichloroethane (1,1-DCA), trichloroethene, xylenes, BTEX (benzene, toluene, ethylbenzene,
21 xylene), dichlorodifluoromethane (Freon F-12), monochlorodifluoromethane (Freon 22),
22 dichlorodifluoromethane (Freon 200), trichlorotrifluoroethane, trichlorofluoromethane,
23 1,1,1-trichloroethane, methylene chloride, paint thinner, acetone, isopropyl alcohol, butyl alcohol,
24 butyl acetate, butanol, monomethanolamine, diethanolamine, triethanolamine, methyl isobutyl
25 ketone, methyl cyclohexane, propyl bromide, bromopropane, monomethylhydrazine, exo-
26 trimethylenenorborn (JP-10) nitrogen tetroxide, ethylene glycol, glycol ether, naphtha, triethyl
27 borane, norbornadiene, methyl cyclopentadiene, polynuclear aromatic hydrocarbons (PAH),
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1 ordnance residues, dinitrotoluene, or chemicals. The halogenated volatile organic compounds
2 believed to have been released from the Facility are chemicals that are recognized by the State of
3 California and the United States Environmental Protection Agency (U.S. EPA) to be likely to cause
4 real and immediate physical injury or result in adverse physical condition to one or more persons.

5 2.5. The Facility is located near the following residences, aquifers, domestic water
6 supplies, surface water bodies, wells, and fragile environments.

7 2.5.1. Residences. The Facility is located at the intersection of Hayvenhurst Avenue
8 and Saticoy Street in Van Nuys, California. The Facility encompasses approximately 56 acres of
9 land located on the western border of the Van Nuys Airport. The nearest residential areas to the
10 Facility are the trailer parks located less than 1000 feet west of the western border of Marquardt's
11 property but on the westerly side of Bull Creek, the flood control channel which actually lies
12 adjacent to Marquardt's westernmost property border. Other residential developments are also
13 located less than 1000 feet south of the southern most boundary of Marquardt's property, which is
14 Saticoy Street. These residential developments are set back from and located on the south side of
15 Saticoy Street, a major east-west thoroughfare.

16 2.5.2. Soils. The Facility is located within the central portion of the San Fernando
17 basin and soils beneath the property can be expected to contain both coarse-textured alluvium
18 derived from the granitic and metamorphic rocks of the western San Gabriel Mountains, and fine-
19 grained sediments derived from fine-grained Tertiary sedimentary rocks.

20 2.5.3. Groundwater. The Facility is located within the San Fernando hydrologic
21 subarea of the Los Angeles-San Gabriel River hydrologic unit, a part of the Los Angeles, drainage
22 province. Based upon the July 1998 Groundwater Report, there are four groundwater monitoring
23 wells but no drinking water wells on the Facility. Groundwater elevation was measured to be at a
24 depth of approximately 133 feet bgs. Groundwater investigations undertaken by the Facility have
25 shown that groundwater beneath the Facility has been contaminated by the same hazardous
26 constituents found in Facility soils and which were managed at the Facility. Hazardous constituents
27 have been found in the on-site wells, which indicates that contamination in the surface and
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subsurface soils at the Facility have a high potential for migrating to drinking water supplies and poses an imminent and substantial danger to drinking water supplies.

2.5.4. Domestic Water Supplies. According to information obtained from the Upper Los Angeles River Area (ULARA) Watermaster, there are several domestic water supply wells located downgradient from the Facility. These drinking water supply wells are the North Hollywood, Verdugo, Erwin, Whitnall, Headworks, Glendale and Pollock Well Fields, which are located in the San Fernando Basin. There are no drinking water wells on the Facility.

According to the "Water Quality Control Plan, Los Angeles Region" (Basin Plan) by the California Regional Water Quality Control Board (LARWQCB), dated February 23, 1995, the groundwater or aquifer beneath the Facility is designated as MUN, having existing beneficial uses for the municipal drinking water supply. Currently the City of Los Angeles derives 15% of its drinking water supply from this aquifer. The presence of DCE and PCE in the groundwater wells on the Facility indicates that contamination in the surface and subsurface soils has a high potential for possibly migrating to drinking water supplies and poses an imminent and substantial danger to drinking water supplies for the City of Los Angeles.

2.5.5. The Facility is located adjacent to the Bull Creek flood control channel which was used by the Facility for the discharge of non-industrial wastewaters (surface run-off) under a National Pollutant Discharge Elimination System (NPDES) permit issued by the LARWQCB. Surface run-off from the Facility runs into storm drains located in the Facility which would then empty directly into Bull Creek.

DETERMINATIONS

3.1. Based on the evidence described above, and on all other information in the record referred to above, DTSC hereby finds that:

3.1.1. All Respondents named hereinabove are persons within the meaning of section 25118 and 21187 of the Health and Safety Code.

3.1.2. Respondent Marquardt is an owner/operator of the interim status facility:

1 3.1.3. Respondent Ferranti International, Inc. is the parent company for Marquardt.

2 3.2. Based on the above findings, DTSC hereby determines that:

3 3.2.1 There is or has been a release of hazardous waste or hazardous waste
4 constituents into the environment from the facility named hereinabove; and,

5 3.2.2 The release of hazardous waste from the facility named hereinabove may
6 present a substantial hazard as well as an imminent and substantial endangerment to human health or
7 the environment.

8 3.2.3. Based on the RFA/PR, U.S. EPA PA, numerous soil vapor and soil matrix
9 sampling data, closure soil sample analyses and groundwater data, DTSC concludes that further
10 investigation is needed to determine the nature and extent of contamination at all presently known
11 RCRA regulated units (Attachment 3) and at all presently known SWMUs and AOCs (Attachment
12 4). If any new or previously unknown or unidentified SWMU or AOC is discovered ("new SWMU
13 or AOC") during any phase of this investigation, the new SWMU or AOC shall be included or
14 incorporated into this Order via a modification provision or amendment of the Order. As with all
15 SWMUs or AOCs, further investigation of any new SWMU or AOC must be done to determine the
16 nature and extent of contamination.

17 3.3. Based on the RFA/PR, U.S. EPA PA, numerous soil vapor and soil matrix
18 sampling data, closure soil sample analyses, groundwater data, as well as the known chemical and
19 physical properties of DCE and PCE, and geological site conditions coupled with the proximity of
20 human and environmental receptors, including drinking water wells, DTSC hereby finds and
21 determines that immediate commencement of interim measures is reasonable and necessary to
22 stabilize the facility pending implementation of the long term corrective measures and to prevent
23 further migration of, or otherwise abate, hazardous wastes, pollutants and contaminants that present
24 a substantial hazard as well as an imminent and substantial endangerment.

25 3.4 The cost estimate set forth in Attachment 5 shall constitute the estimated costs for
26 the corrective action work to be performed and identified herein, for purposes of determining the
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1 amount of financial responsibility, unless and until DTSC formally approves a revised estimate by
2 Respondents, or upon DTSC's own authority.

4 WORK TO BE PERFORMED

5 4. Based on the foregoing FINDINGS OF FACT, IT IS HEREBY ORDERED THAT:

6 4.1. Respondents shall perform the work required by this Order in a manner consistent with:
7 the Specific Criteria for Interim Measures, the attached Scopes of Work; DTSC-approved RCRA
8 Facility Investigation Workplan, Corrective Measures Study Workplan, Corrective Measures
9 Implementation Workplan, and any other DTSC-approved Workplans; HSC and other applicable
10 state and federal laws and their implementing regulations; and applicable DTSC or U.S. EPA
11 guidance documents. Applicable guidance includes, but is not limited to, the "RCRA Facility
12 Investigation (RFI) Guidance" (Interim Final, May 1989, EPA 530/SW-89-031), "RCRA
13 Groundwater Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1,
14 September 1986), "Test Methods For Evaluating Solid Waste, Update III" (SW-846), and
15 "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-
16 031, July 1986).

17 4.2. Interim Measures (IM)

18 4.2.1. Respondents shall evaluate available data and assess the need for interim
19 measures in addition to those specifically required by this Order. Interim measures shall be used
20 whenever possible to control or abate immediate threats to human health and/or the environment,
21 and to prevent and/or minimize the spread of contaminants while long-term corrective action
22 alternatives are being evaluated.

23 4.2.2. Respondents shall submit a Current Conditions Report to DTSC in accordance
24 with Section 4.3.1 of this Order. The Current Conditions Report shall contain an assessment of
25 interim measures. The assessment must include other interim measures that could be implemented
26 at the Facility in addition to those required by this Order. The assessment must also identify any
27 additional data needed for making decisions on interim measures. These new data or information
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1 shall be collected during the early stages of the RCRA Facility Investigation required by this Order.
2 DTSC will review the Respondents' assessment and determine which interim measures, in addition
3 to those required by this Order, Respondents shall implement at the Facility. If deemed appropriate
4 by DTSC, such determination may be deferred until additional data are collected.

5 4.2.3. Within sixty (60) days of the effective date of this Order, Respondents shall
6 submit to DTSC a Workplan for the implementation of Interim Measures ("IM Workplan"). The IM
7 Workplan is subject to approval by DTSC and shall provide for the performance of all Interim
8 Measures necessary to achieve stabilization at the Facility. The IM Workplan shall include a
9 schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and
10 Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and
11 Specifications shall be developed in a manner consistent with the Scope of Work for Interim
12 Measures Implementation appended as Attachment 6.

13 4.2.4. In the event Respondents identify an immediate or potential threat to human
14 health and/or the environment, other than those outlined in this Order, discover new releases of
15 hazardous waste and/or hazardous waste constituents, or discover new solid waste management units
16 not previously identified, Respondents shall notify the DTSC Project Coordinator orally within 48
17 hours of discovery and notify DTSC in writing within 10 days of discovery summarizing the
18 findings, including the immediacy and magnitude of the additional potential threat to human health
19 and or the environment. In such event, within thirty (30) days of receiving DTSC's written request,
20 Respondents shall submit to DTSC an IM Workplan for approval. The IM Workplan shall include a
21 schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and
22 Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and
23 Specifications shall be developed in a manner consistent with the Scope of Work for Interim
24 Measures Implementation appended as Attachment 6. If DTSC determines that immediate action is
25 required, the DTSC Project Coordinator may orally authorize the Respondents to act prior to DTSC's
26 receipt of the IM Workplan.

1 4.2.5. If DTSC identifies an immediate or potential threat to human health and/or the
2 environment, other than those identified in this Order, discovers new releases of hazardous waste
3 and/or hazardous waste constituents, or discovers new solid waste management units not previously
4 identified, DTSC will notify Respondents in writing. Within thirty (30) days of receiving DTSC's
5 written notification, Respondents shall submit to DTSC for approval an IM Workplan that identifies
6 Interim Measures that will mitigate the threat. The IM Workplan shall include a schedule for
7 submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and Specifications. The
8 IM Workplan, IM Operation and Maintenance Plan, and IM Plans and Specifications shall be
9 developed in a manner consistent with the Scope of Work for Interim Measures Implementation
10 appended as Attachment 6. If DTSC determines that immediate action is required, the DTSC Project
11 Coordinator may orally authorize Respondents to act prior to receipt of the IM Workplan.

12 4.2.6. All IM Workplans shall ensure that the Interim Measures are designed to
13 mitigate current or potential threats to human health and/or the environment, and should, to the
14 extent practicable, be consistent with the objectives of, and contribute to the performance of, any
15 remedy which may be required at the Facility.

16 4.2.7. Concurrent with the submission of an IM Workplan, Respondents shall submit
17 to DTSC a Health and Safety Plan in accordance with the Scope of Work for a Health and Safety
18 Plan, Attachment 7.

19 4.2.8. Concurrent with the submission of an IM Workplan, Respondents shall submit
20 to DTSC a Community Profile for DTSC approval in accordance with Attachment 8. Based on the
21 information provided in the Community Profile, if DTSC determines that there is a high level of
22 community concern about the Facility, DTSC may require Respondents to prepare a Public
23 Participation Plan.

24 4.3. RCRA Facility Investigation (RFI).

25 4.3.1. Within ninety (90) days of the effective date of this Order, Respondents shall
26 submit to DTSC a Current Conditions Report and a Workplan for a RCRA Facility Investigation
27 ("RFI Workplan"). The Current Conditions Report and RFI Workplan are subject to approval by
28

1 DTSC and shall be developed in a manner consistent with the Scope of Work for a RCRA Facility
2 Investigation contained in Attachment 9. DTSC will review the Current Conditions Report and RFI
3 Workplan and notify Respondents in writing of DTSC's approval or disapproval.

4 4.3.2. The RFI Workplan shall detail the methodology to: (1) gather data needed to
5 make decisions on interim measures/stabilization, other than those required in this Order, during the
6 early phases of the RCRA Facility Investigation; (2) identify and characterize all sources of
7 contamination; (3) define the nature, degree and extent of contamination; (4) define the rate of
8 movement and direction of contaminant flow; (5) characterize the potential pathways of contaminant
9 migration; (6) identify actual or potential human and/or ecological receptors; and (7) support
10 development of alternatives from which a corrective measure will be selected by DTSC. A specific
11 schedule for implementation of all activities shall be included in the RFI Workplan.

12 4.3.3. Respondents shall submit a RFI Report to DTSC for approval in accordance
13 with DTSC-approved RFI Workplan schedule. The RFI Report shall be developed in a manner
14 consistent with the Scope of Work for a RCRA Facility Investigation contained in Attachment 9. If
15 there is a phased investigation, separate RFI Reports and a report that summarizes the findings from
16 all phases of the RFI must be submitted to DTSC. DTSC will review the RFI Report(s) and notify
17 Respondents in writing of DTSC's approval or disapproval. Respondents will revise or append the
18 RFI reports in accordance with comments from DTSC.

19 4.3.4. Concurrent with the submission of a RFI Workplan, Respondents shall submit
20 to DTSC a Health and Safety Plan in accordance with Attachment 7. If Workplans for both an IM
21 and RFI are required by this Order, Respondents may submit a single Health and Safety Plan that
22 addresses the combined IM and RFI activities.

23 4.3.5. Respondents shall submit a RFI Summary Fact Sheet to DTSC that
24 summarizes the findings from all phases of the RFI. The RFI Summary Fact Sheet shall be
25 submitted to DTSC in English and in Spanish, in accordance with the schedule contained in the
26 approved RFI Workplan. DTSC will review the RFI Summary Fact Sheet and notify Respondents in
27 writing of DTSC's approval or disapproval, including any comments and/or modifications. When
28

1 DTSC approves the RFI Summary Fact Sheet, Respondents shall mail the approved RFI Summary
2 Fact Sheet to all individuals on the Facility mailing list established pursuant to 22 Cal. Code Regs.
3 section 66271.9(c)(1)(D), within fifteen (15) calendar days of receipt of written approval.

4 4.3.6. Concurrent with the submission of a RFI Workplan, Respondents shall submit
5 to DTSC a Community Profile for DTSC approval in accordance with Attachment 8. Based on the
6 information provided in the Community Profile, if DTSC determines that there is a high level of
7 community concern about the Facility, DTSC may require Respondents to prepare a Public
8 Participation Plan.

9 4.4. Corrective Measures Study (CMS).

10 4.4.1. Respondents shall prepare a Corrective Measures Study if contaminant
11 concentrations remaining after implementation of Interim Measures exceed current health-based
12 action levels and/or if DTSC determines that the contaminant releases pose a potential threat to
13 human health and/or the environment.

14 4.4.2. Within forty-five (45) days of DTSC's approval of the RFI Report (or
15 Respondents' receipt of a written request from DTSC), Respondents shall submit a CMS Workplan
16 to DTSC. The CMS Workplan is subject to approval by DTSC and shall be developed in a manner
17 consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 10.

18 4.4.3. The CMS Workplan shall detail the methodology for developing and
19 evaluating potential corrective measures to remedy any contamination at the Facility. The CMS
20 Workplan shall identify the potential corrective measures, including any innovative technologies,
21 that may be used for the containment, treatment, remediation, and/or disposal of contamination.

22 4.4.4. Respondents shall prepare treatability studies for all potential corrective
23 measures that involve treatment except where Respondents can demonstrate to DTSC's satisfaction
24 that they are not needed. The CMS Workplan shall include, at a minimum, a summary of the
25 proposed treatability study including a conceptual design, a schedule for submitting a treatability
26 study workplan, or Respondents' justification for not proposing a treatability study.

1 4.4.5. Respondents shall submit a CMS Report to DTSC for approval in accordance
2 with DTSC-approved CMS Workplan schedule. The CMS Report shall be developed in a manner
3 consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 10.
4 DTSC will review the CMS Report and notify Respondents in writing of DTSC's approval or
5 disapproval.

6 4.5. Remedy Selection.

7 4.5.1. DTSC will provide the public with an opportunity to review and comment on
8 the final draft of the CMS Report, DTSC's proposed corrective measures for the Facility, and
9 DTSC's justification for selection of such corrective measures.

10 4.5.2. Following the public comment period, DTSC may select final corrective
11 measures or require Respondents to revise the CMS Report and/or perform additional corrective
12 measures studies.

13 4.5.3. DTSC will notify Respondents of the final corrective measures selected by
14 DTSC in the Final Decision and Response to Comments. The notification will include DTSC's
15 reasons for selecting the corrective measures.

16 4.6. Corrective Measures Implementation (CMI).

17 4.6.1. Within ninety (90) days of Respondents' receipt of notification of DTSC's
18 selection of the corrective measures, Respondents shall submit to DTSC a Corrective Measures
19 Implementation (CMI) Workplan. The CMI Workplan is subject to approval by DTSC and shall be
20 developed in a manner consistent with the Scope of Work for Corrective Measures Implementation
21 contained in Attachment 11.

22 4.6.2. Concurrent with the submission of a CMI Workplan, Respondents shall submit
23 to DTSC a Health and Safety Plan in accordance with Attachment 7.

24 4.6.3. Concurrent with the submission of a CMI Workplan, Respondents shall submit
25 to DTSC a Community Profile for DTSC approval in accordance with Attachment 8. Based on the
26 information provided in the Community Profile, if DTSC determines that there is a high level of
27
28

community concern about the Facility, DTSC may require Respondents to prepare a site specific Public Participation Plan and a Cumulative Health Risk Assessment.

4.6.4. The CMI program shall be designed to facilitate the design, construction, operation, maintenance, and monitoring of corrective measures at the Facility. In accordance with the schedule contained in the approved CMI Workplan, Respondents shall submit to DTSC the documents listed below. These documents shall be developed in a manner consistent with the Scope of Work for Corrective Measures Implementation contained in Attachment 11.

- Operation and Maintenance Plan
- Draft Plans and Specifications
- Final Plans and Specifications
- Construction Workplan
- Construction Completion Report
- Corrective Measures Completion Report

4.6.5. DTSC will review all required CMI documents and notify Respondents in writing of DTSC's approval or disapproval.

4.6.6. As directed by DTSC, Respondents shall establish a financial assurance mechanism for Corrective Measures Implementation. The financial assurance mechanisms may include a performance or surety bond, liability insurance, an escrow performance guarantee account, a trust fund, financial test, or corporate guarantee as described in 22 Cal. Code Regs. section 66265.143 or any other mechanism acceptable to DTSC. The mechanism shall be established to allow DTSC access to the funds to undertake Interim Measures or Corrective Measures Implementation tasks if Respondents are unable or unwilling to undertake the required actions.

OTHER REQUIREMENTS AND PROVISIONS

5.1. Project Coordinator. Within fourteen (14) days of the effective date of this Order, DTSC and Respondents shall each designate a Project Coordinator and shall notify each other in writing of the Project Coordinator selected. Each Project Coordinator shall be responsible for

1 overseeing the implementation of this Order and for designating a person to act in his/her absence.
2 All communications between Respondents and DTSC, and all documents, report approvals, and
3 other correspondence concerning the activities performed pursuant to this Order shall be directed
4 through the Project Coordinators. Each party may change its Project Coordinator with at least seven
5 (7) days prior written notice.

6 5.2. Department Approval.

7 5.2.1. Respondents shall revise any workplan, report, specification, or schedule in
8 accordance with DTSC's written comments. Respondents shall submit to DTSC any revised
9 documents by the due date specified by DTSC. Revised submittals are subject to DTSC's approval
10 or disapproval.

11 5.2.2. Upon receipt of DTSC's written approval, Respondents shall commence work
12 and implement any approved workplan in accordance with the schedule and provisions contained
13 therein.

14 5.2.3. Any DTSC approved workplan, report, specification, or schedule required by
15 this Order shall be deemed incorporated into this Order.

16 5.2.4. Oral advice, suggestions, or comments given by DTSC representatives will not
17 constitute an official approval or decision.

18 5.3. Submittals.

19 5.3.1. Beginning with the first full month following the effective date of this Order,
20 Respondents shall provide DTSC with monthly progress reports of corrective action activities
21 conducted pursuant to this Order. Progress reports are due on the fifteenth day of the month for the
22 preceding month. The progress reports shall conform to the Scope of Work for Progress Reports
23 contained in Attachment 12. DTSC may adjust the frequency of progress reporting to be consistent
24 with site-specific activities.

25 5.3.2. Any report or other document submitted by Respondents pursuant to this Order
26 shall be signed and certified by the project coordinator, a responsible corporate officer, or a duly
27 authorized representative.
28

1 5.3.3. The certification required above, shall be in the following form:

2 "I certify that the information contained in or accompanying this submittal is
3 true, accurate, and complete. As to those portions of this submittal for which I
4 cannot personally verify the accuracy, I certify that this submittal and all
5 attachments were prepared at my direction in accordance with procedures
6 designed to assure that qualified personnel properly gathered and evaluated
7 the information submitted. I am aware that there are significant penalties for
8 submitting false information, including the possibility of fine and
9 imprisonment for knowing violations.

10 Signature: _____

11 Name: _____

12 Title: _____

13 Date: _____ "

14 5.3.4. Respondents shall provide four (4) copies of all documents, including but not
15 limited to, workplans, reports, and correspondence of fifteen (15) pages or longer. Submittals
16 specifically exempted from this copy requirement are all progress reports and correspondence of less
17 than 15 pages, of which one copy is required.

18 5.3.5. Unless otherwise specified, all reports, correspondence, approvals,
19 disapprovals, notices, or other submissions relating to this Order shall be in writing and shall be sent
20 to the current Project Coordinators.

21 5.4. Proposed Contractor/Consultant. All work performed pursuant to this Order shall be
22 under the direction and supervision of a professional engineer or registered geologist, registered in
23 California, with expertise in hazardous waste site cleanup. Respondents' contractor(s) or
24 consultant(s) shall have the technical expertise sufficient to fulfill his or her responsibilities. Within
25 fourteen (14) days of the effective date of this Order, Respondents shall notify the DTSC Project
26 Coordinator in writing of the name, title, and qualifications of the professional engineer or registered
27 geologist and of any contractors or consultants and their personnel to be used in carrying out the
28 requirements of this Order. DTSC may disapprove of Respondents' contractor(s) and/or
consultant(s).

1 5.5. Quality Assurance.

2 5.5.1. All sampling and analyses performed by Respondents under this Order shall
3 follow applicable DTSC and U.S. EPA guidance for sampling and analysis. Workplans shall contain
4 quality assurance/quality control and chain of custody procedures for all sampling, monitoring, and
5 analytical activities. Any deviations from the approved workplans must be approved by DTSC prior
6 to implementation, must be documented, including reasons for the deviations, and must be reported
7 in the applicable report (e.g., RFI Report).

8 5.5.2. The names, addresses, and telephone numbers of the California State certified
9 analytical laboratories Respondents propose to use must be specified in the applicable workplans.

10 5.5.3. All workplans required under this Order shall include data quality objectives
11 for each data collection activity to ensure that data of known and appropriate quality are obtained
12 and that data are sufficient to support their intended uses.

13 5.5.4. Respondents shall monitor to ensure that high quality data are obtained by its
14 consultant or contract laboratories. Respondents shall ensure that laboratories used by Respondents
15 for analysis perform such analysis according to the latest approved edition of "Test Methods for
16 Evaluating Solid Waste, (SW-846)", or other methods deemed satisfactory to DTSC. If methods
17 other than U.S. EPA methods are to be used, Respondents shall specify all such protocols in the
18 applicable workplan (e.g., RFI Workplan). DTSC may reject any data that do not meet the
19 requirements of the approved workplan, U.S. EPA analytical methods, or quality assurance/quality
20 control procedures, and may require resampling and analysis.

21 5.5.5. Respondents shall ensure that the California State certified laboratories used
22 by Respondents for analyses have a quality assurance/quality control program. DTSC may conduct
23 a performance and quality assurance/quality control audit of the laboratories chosen by Respondents
24 before, during, or after sample analyses. Upon request by DTSC, Respondents shall have their
25 selected laboratory perform analyses of samples provided by DTSC to demonstrate laboratory
26 performance. If the audit reveals deficiencies in a laboratory's performance or quality
27 assurance/quality control procedures, resampling and analysis may be required.
28

1 5.6. Sampling and Data/Document Availability.

2 5.6.1. Respondents shall submit to DTSC upon request the results of all sampling
3 and/or tests or other data generated by its employees, agents, consultants, or contractors pursuant to
4 this Order.

5 5.6.2. Notwithstanding any other provisions of this Order, DTSC retains all of its
6 information gathering and inspection authority and rights, including enforcement actions related
7 thereto, under HSC, and any other state or federal statutes or regulations.

8 5.6.3. Respondents shall notify DTSC in writing at least seven (7) days prior to
9 beginning each separate phase of field work approved under any workplan required by this Order. If
10 Respondents believe they must commence emergency field activities without delay, Respondents
11 may seek emergency telephone authorization from the DTSC Project Coordinator or, if the Project
12 Coordinator is unavailable, his/her Branch Chief, to commence such activities immediately.

13 5.6.4. At the request of DTSC, Respondents shall provide or allow DTSC or its
14 authorized representative to take split or duplicate samples of all samples collected by Respondents
15 pursuant to this Order. Similarly, at the request of Respondents, DTSC shall allow Respondents or
16 their authorized representative to take split or duplicate samples of all samples collected by DTSC
17 under this Order.

18 5.7. Access.

19 5.7.1. Subject to reasonable security and safety procedures, Respondents shall
20 provide DTSC and its representatives access at all reasonable times to the Facility and any other
21 property to which access is required for implementation of this Order and shall permit such persons
22 to inspect and copy all records, files, photographs, documents, including all sampling and
23 monitoring data, shipping records, customer lists and addresses, hazardous waste manifests and
24 milkrun manifests, that directly or indirectly pertain to hazardous materials and/or constituents
25 handled at the facility and work undertaken pursuant to this Order and that are within the possession
26 or under the control of Respondents or their contractors or consultants.

1 5.7.2. To the extent that work being performed pursuant to this Order must be done
2 beyond the Facility property boundary, Respondents shall use their best efforts to obtain access
3 agreements necessary to complete work required by this Order from the present owners of such
4 property within thirty (30) days of approval of any workplan for which access is required. Best
5 efforts as used in this paragraph shall include, at a minimum, a letter by certified mail from the
6 Respondents to the present owners of such property requesting an agreement to permit Respondents
7 and DTSC and its authorized representatives access to such property and offering the payment by
8 Respondents of reasonable sums of money in consideration of granting access. Any such access
9 agreement shall provide for access to DTSC and its representatives. Respondents shall provide
10 DTSC's Project Coordinator with a copy of any access agreements. In the event that an agreement
11 for access is not obtained within thirty (30) days of approval of any workplan for which access is
12 required, or of the date that the need for access becomes known to Respondents, Respondents shall
13 notify DTSC in writing within fourteen (14) days thereafter regarding both the efforts undertaken to
14 obtain access and its failure to obtain such agreements. DTSC may, at its discretion, assist
15 Respondents in obtaining access.

16 5.7.3. Nothing in this section limits or otherwise affects DTSC's right of access and
17 entry pursuant to any applicable state or federal law or regulation.

18 5.7.4. Nothing in this Order shall be construed to limit or otherwise affect
19 Respondents' liability and obligation to perform corrective action including corrective action beyond
20 the Facility boundary.

21 5.8. Record Preservation.

22 5.8.1. Respondents shall retain, during the implementation of this Order and for a
23 minimum of six (6) years thereafter, all data, records, and documents that relate in any way to the
24 implementation of this Order or to hazardous waste management and/or disposal at the Facility.
25 Respondents shall notify DTSC in writing ninety (90) days prior to the destruction of any such
26 records, and shall provide DTSC with the opportunity to take possession of any such records. Such
27
28

1 written notification shall reference the effective date, caption, and docket number of this Order and
2 shall be addressed to:

3 José Kou, P.E., Chief
4 Southern California Permitting Branch
5 Department of Toxic Substances Control
6 1011 N. Grandview Avenue
7 Glendale, California, 91201

8 5.8.2. If Respondents retain or employ any agent, consultant, or contractor for the
9 purpose of complying with the requirements of this Order, Respondents will require any such agents,
10 consultants, or contractors to provide Respondents a copy of all documents produced pursuant to this
11 Order.

12 5.8.3. All documents pertaining to this Order shall be stored in a central location at
13 the Facility to afford ease of access by DTSC and its representatives.

14 5.9. Change in Ownership. No change in ownership or corporate or partnership status
15 relating to the Facility shall in any way alter Respondents' responsibility under this Order. No
16 conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall affect
17 Respondents' obligations under this Order. Unless DTSC agrees that such obligations may be
18 transferred to a third party, Respondents shall be responsible for and liable for any failure to carry
19 out all activities required of Respondents by the terms and conditions of this Order, regardless of
20 Respondents' use of employees, agents, contractors, or consultants to perform any such tasks.

21 5.10. Notice to Contractors and Successors. Respondents shall provide a copy of this Order
22 to all contractors, laboratories, and consultants retained to conduct or monitor any portion of the
23 work performed pursuant to this Order and shall condition all such contracts on compliance with the
24 terms of this Order. Respondents shall give written notice of this Order to any successor in interest
25 prior to transfer of ownership or operation of the Facility and shall notify DTSC at least seven (7)
26 days prior to such transfer.

27 5.11. Compliance with Applicable Laws. All actions required to be taken pursuant to this
28 Order shall be undertaken in accordance with the applicable requirements of all local, state, and

1 federal laws and regulations. Respondents shall obtain or cause its representatives to obtain all
2 permits and approvals necessary under such laws and regulations.

3 5.12. Costs. Respondents are liable for any costs associated with the implementation of this
4 Order.

5 5.13. Endangerment during Implementation. In the event that DTSC determines that any
6 circumstances or activity (whether or not pursued in compliance with this Order) are creating an
7 imminent or substantial endangerment to the health or welfare of people at the Facility or in the
8 surrounding area or to the environment, DTSC may order Respondents to stop further
9 implementation of this Order for such period of time as needed to abate the endangerment. Any
10 deadline in this Order directly affected by an Order to Stop Work under this section shall be
11 extended for the term of the Order to Stop Work.

12 5.14. Liability. Nothing in this Order shall constitute or be construed as a satisfaction or
13 release from liability for any conditions or claims arising as a result of past, current, or future
14 operations of Respondents. Notwithstanding compliance with the terms of this Order, Respondents
15 may be required to take further actions as are necessary to protect public health or welfare or the
16 environment.

17 5.15. Government Liabilities. The State of California shall not be liable for injuries or
18 damages to persons or property resulting from acts or omissions by Respondents or related parties
19 specified in section 4.19. in carrying out activities pursuant to this Order, nor shall the State of
20 California be held as a party to any contract entered into by Respondents or its agents in carrying out
21 activities pursuant to the Order.

22 5.16. Additional Enforcement Actions. By issuance of this Order, DTSC does not waive the
23 right to take further enforcement actions.

24 5.17. Incorporation of Plans and Reports. All plans, schedules, and reports that require
25 DTSC approval and are submitted by Respondents pursuant to this Order are incorporated in this
26 Order upon approval by DTSC.

1 5.18. Penalties for Noncompliance. Failure to comply with the terms of this Order may
2 subject Respondents to costs, penalties, and/or punitive damages for any costs incurred by DTSC or
3 other government agencies as a result of such failure, as provided by HSC section 25188 and other
4 applicable provisions of law.

5 5.19. Parties Bound. This Order shall apply to and be binding upon Respondents in their
6 individual and business capacities, and upon their officers and/or directors (as appropriate), agents,
7 employees, contractors, consultants, receivers, trustees, successors, and assignees, including but not
8 limited to individuals, partners, and subsidiary and parent corporations.

9 5.20. Compliance with Waste Discharge Requirements. Respondents shall comply with all
10 applicable waste discharge requirements issued by the State Water Resources Control Board or a
11 California regional water quality control board.

12 5.21. Submittal Summary. Below is a summary of the major reporting requirements
13 contained in this Order. The summary is provided as a general guide and does not contain all
14 requirements. Please refer to the specific language of this Order for all the requirements.

<u>Section</u>	<u>Action</u>	<u>Due Date</u>
5.1.	Designate Project Coordinator and notify DTSC in writing	14 days from effective date of Order
4.2.4.	Notify DTSC orally of potential threats to human health	48 hours after discovery
4.2.4.	Notify DTSC in writing of potential threats to human health	10 days after discovery
4.2.3. 4.2.7. 4.2.8.	Submit Interim Measures Workplan, Health and Safety Plan, Community Profile / Public Involvement Plan	60 days from effective date of Order
4.3.1. 4.3.4. 4.3.6.	Submit RFI Workplan, Current Conditions Report, Community Profile / Public Involvement Plan, and Health and Safety Plan	90 days from effective date of Order

1	5.2.2.	Implement approved Workplans	In accordance with schedules contained in approved Workplans
2			
3	4.4.2.	Submit CMS Workplan	45 days after DTSC approval of RFI report or receipt of written request from DTSC.
4			
5	4.6.1.	Submit CMI Workplan	90 days from receipt of notification of DTSC selection of a corrective measure
6	4.6.2.	Health and Safety Plan, and	
7	4.6.3.	Community Profile / Public Involvement Plan	
8	5.3.1.	Submit first Progress Report	Fifteenth day of the month following the effective date of Order
9			
10	5.3.1	Submit Progress Reports	Monthly
11	5.4.	Notify DTSC in	14 days from effective date of Order
12		writing of contractors to carry out terms of Order	
13			
14	5.6.3.	Notify DTSC of when field work starts	7 days before each phase of field work

RIGHT TO A HEARING

6. You may request a hearing to challenge the Order. Appeal procedures are described in the attached Statement to Respondent. The Order will not be stayed during the pendency of any appeal.

EFFECTIVE DATE

7. This Order is final and effective immediately on the date of issuance indicated below. DTSC finds that the violations associated with this Order may pose an imminent and substantial endangerment to the public health or safety or the environment in that DTSC has found extensive evidence of pervasive and long term releases into the environment as identified in the RFA/PR, U.S. EPA PA, numerous soil vapor and soil matrix sampling points, closure soil sample analyses and Groundwater Report data. This evidence, coupled with the known chemical and physical properties of DCE and PCE, and geological site conditions in close proximity to human and

1 environmental receptors, including drinking water wells, as set forth hereinabove, present a clear risk
2 of a substantial hazard as well as an imminent and substantial endangerment.

3
4 Date of Issuance:

10/5/98



Jose Kou, Chief
Southern California Permitting Branch
Department of Toxic Substances Control

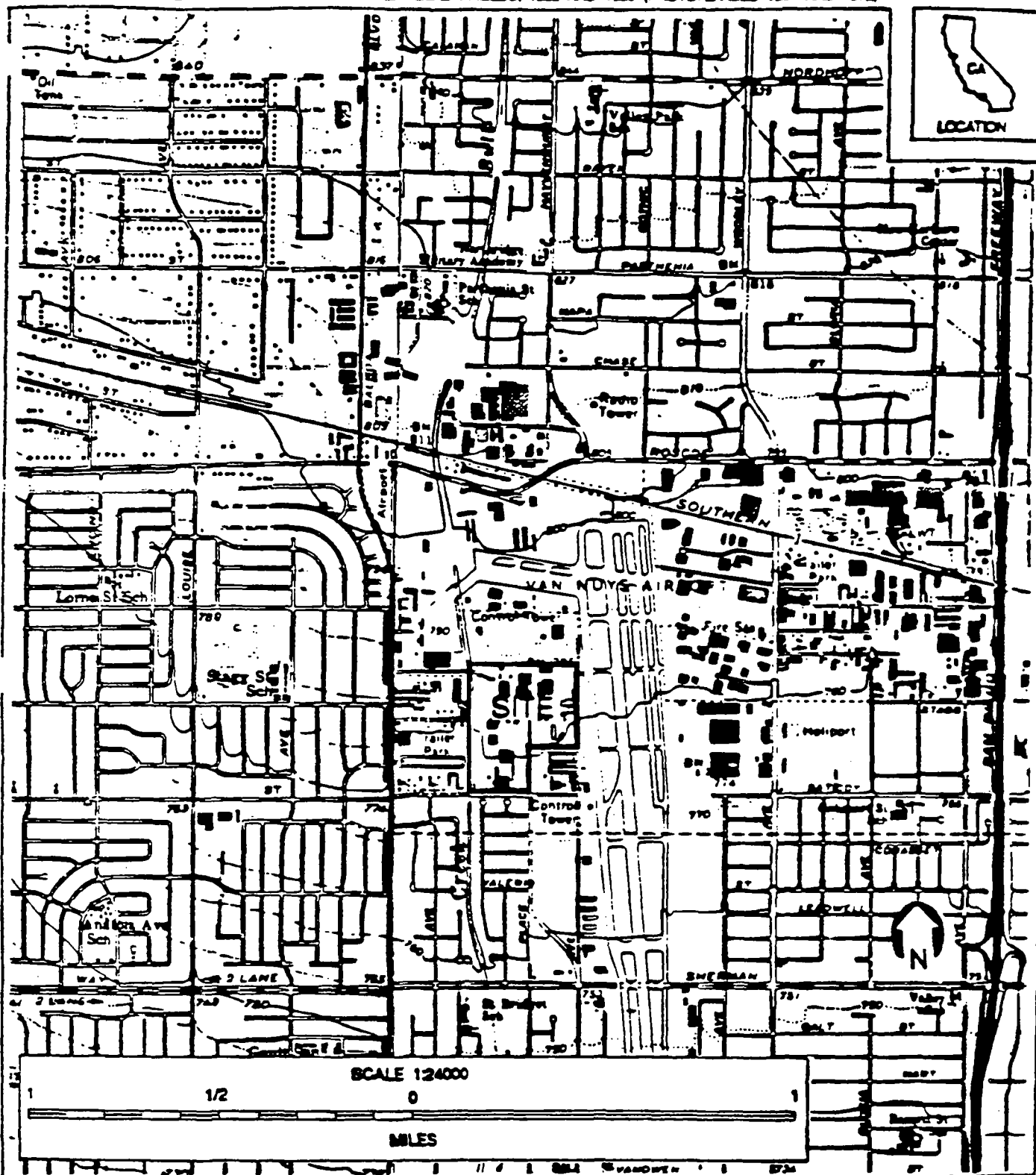
LIST OF ATTACHMENTS

- 1 Site location map. (1 p.)
- 2 Facility map. (1 p.)
- 3 Presently known RCRA Units (1 p.)
- 4 Presently known Solid Waste Management Units (SWMU) and Areas of Concern (AOC) (6 pp.)
- 5 Detailed Corrective Action Cost Estimate for Required Financial Assurance (5pp.)
- 6 Scope of Work for Interim Measures Implementation (9 pp.)
- 7 Scope of Work for a Health and Safety Plan (2 pp.)
- 8 Community Profile Outline (2 pp.)
- 9 Scope of Work for a RCRA Facility Investigation (34 pp.)
- 10 Scope of Work for Corrective Measures Study (10 pp.)
- 11 Scope of Work for Corrective Measures Implementation (17 pp.)
- 12 Scope of Work for Progress Reports (1 p.)

The Marquardt Company
ENFORCEMENT ORDER FOR CORRECTIVE ACTION
DTSC Docket No. HWCA 98/99-3015

ATTACHMENT 1
SITE LOCATION MAP

SOURCE: USGS CANOGA PARK AND VAN NUYS CALIF. QUADRANGLES, 1962 AND 1966 (PHOTOREVISED 1967 AND 1972).



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Z06220_1.CDR 6-22-82

Figure 1
SITE LOCATION MAP
The Marquardt Company
16555 Saticoy Street
Van Nuys, California

The Marquardt Company
ENFORCEMENT ORDER FOR CORRECTIVE ACTION
DTSC Docket No. HWCA 98/99-3015

ATTACHMENT 2

FACILITY MAP

◁ NORTH

ARMINTA AVE.

SATICDY STREET

LOCATION OF STORAGE
AREA C OLD (REPAVED)
HAZARDOUS WASTE
STORAGE AREA

APPROXIMATE SCALE 1"=180'

DTG: RMC
 TIME DT
 DTG: RMC
 DATE: 11/11/8
 TIME: 173505
 DTG: 173505



FACILITY LOCATION MAP
THE MARQUADRE COMPANY
VAN NUYS, CALIFORNIA

MILTON MUSER
Corporation

FIGURE 2-2

75

ATTACHMENT 3

Presently Known RCRA Units:

HWSA A - Volatile organic compounds (VOC) contamination found. Pattern of VOC contamination indicates that the unit is a likely source of VOC contamination. VOC contamination found at depths greater than 100 feet during 1996 soil matrix and soil vapor sampling. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

HWSA B - VOC contamination found near and around this unit through the Kleinfelder soil gas survey done by Kaiser Marquardt.

HWSA C - VOC contamination found via 1996 soil matrix and soil vapor sampling. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

HWSA D - VOC contamination found via 1996 soil matrix and soil vapor sampling. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

Test Cell 1 - VOC contamination found via January 1992 soil vapor survey by Kleinfelder.

Test Cell 9 - VOC contamination found via January 1992 soil vapor survey by Kleinfelder.

PRI - VOC contamination found via January 1992 soil vapor survey by Kleinfelder.

Treatment 109 - Possible metals contamination and VOC contamination due to degreasers located inside Building 109. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

Treatment 101 - Possible metals contamination and may be located above subsurface VOC contamination that is under and around Building 115. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

Treatment 115 - Possible metals contamination and may be located above subsurface VOC contamination that is under and around Building 115. The July 1998 Groundwater Report indicates groundwater contamination in the area of this unit.

ATTACHMENT 4

The following is a list of Solid Waste Management Units (SWMU) and Areas of Concern (AOC) at The Marquardt Company including the area or footprint of the following current or historical buildings, structures, equipment, activities or location numbers.

- (1) Building 109, substation, ordnance manufacturing, machining - Significant volatile organic compounds (VOC) contamination from degreaser units, VOC storage tanks, paint spray booths, degreaser/still and VOC containers. February 15, 1996 letter from SCS Engineers to DTSC documents an investigation done and preliminary recommendations. Possible metals contamination. July 1998 Groundwater Report indicates groundwater contamination beneath, near or around the area of this building. [AOC 3.2.31- 3.2.35 from the 1991 RFA/PR and listed in SCAQMD permit, Attachment 4 of RFA/PR]
- (2) Kaiser Marquardt leased property - VOC contamination found throughout the leased property, higher levels found near Buildings 3, 3A, 23, 26, 31, 2 and another cluster of buildings which includes Buildings 16, 43, 12. VOC contamination information came from Kleinfelder report of January 1992. Some of the buildings listed here were noted as areas of concern in the US EPA preliminary assessment of 1992 due to the presence of machining units, paint booths, and 1,1,1-Trichloroethane (1,1,1-TCA) units (aboveground tanks and containers). Some of the machining and 1,1,1-TCA units were located above shallow concrete sumps. VOC contamination at Building 3A's underground storage tank area confirms VOC contamination. [Various AOCs from the 1991 RFA/PR]
- (3) Building 115 - Area of Concern is former Building 65 (laboratory) area, which was demolished and now Buildings 115 and 116 are located here. US EPA preliminary assessment of 1992 lists this as an area of concern per Elaine Oh of the US EPA, Region IX. Also, additional sampling conducted by SCS Engineers in 1996 shows there is widespread VOC contamination beneath and around this building. Building 115 contained at least three vapor degreaser units and two paint spray booths which were under permits issued by the SCAQMD (Attachment 4 of RFA/PR). July 1998 Groundwater Report indicates groundwater contamination beneath, near or around this building.
- (4) Building or Area 104 - VOC contamination found during 1996 sampling. Former hazardous material storage area. July 1998 Groundwater Report indicates groundwater

contamination beneath, near or around this building or area. [AOC 3.2.29 and 3.2.30 from the 1991 RFA/PR]

- (5) Storage Areas 36 and 40 - Possible metals contamination and VOC contamination found during 1996 sampling. July 1998 Groundwater Report indicates groundwater contamination south of these two areas. [AOC 3.2.16 and 3.2.18 from the 1991 RFA/PR]
- (6) Building 101 Plating Line Pit - Possible metals contamination found during 1996 sampling. July 1998 Groundwater Report indicates groundwater contamination beneath, near or around this building. [AOC 3.2.28 from the 1991 RFA/PR]
- (7) Building 21 Painting Areas, Manufacturing Area, Machine Shop Area - VOC contamination found during 1996 sampling. July 1998 Groundwater Report indicates groundwater contamination near this building.
- (8) Building 21 HWSA - VOC and TRPH contamination found during 1996 sampling. July 1998 Groundwater Report indicates groundwater contamination near this building.
- (9) Building 29 UST Area - VOC contamination found during 1996 sampling. July 1998 Groundwater Report indicates groundwater contamination beneath, near or around this area.
- (10) Building 28, Shooting Range - Lead contamination confirmed during 1996 sampling.
- (11) Building 84 Clarifier - Possible metals and VOC contamination found during 1996 sampling.
- (12) Preliminary review, first phase of RFA by DTSC, April 1991, identifies 45 individual SWMUs and 40 areas of concern. At least two, possibly three hazardous waste storage units and one treatment unit were closed without an approved closure plan and notification. Of the 45 SWMUs identified in this report, 13 of them are RCRA units or parts of RCRA units which were included in Attachment A and 6 of the tanks were actually part of Treatment unit 115 which is identified in Attachment A as well. July 1998 Groundwater Report indicates groundwater contamination beneath or near many of the SWMUs and AOCs identified in the RFA/PR.
- (13) Two Cisterns - Observed by geologist, Andres Cano, during site visits and documented in memorandum dated August 22, 1996. One located northwest of HWSA A and the other

northeast of Building 117. July 1998 Groundwater Report indicates groundwater contamination near the cistern observed northwest of HWSA A.

- (14) One "Dry Well" (infiltration gallery) - Observed by geologist, Andres Cano, during site visits and documented in memorandum dated August 22, 1996. Located northwest of HWSA A. July 1998 Groundwater Report indicates groundwater contamination near this dry well.
- (15) All Clarifiers, Sumps, Drains - Recommendation by Geologist, Andres Cano, that these units be included as AOCs. Buildings 84, 27 and 101 are known to have clarifiers in or near them. However, there may be many more clarifiers, sumps and drains located throughout the site that have not been specifically identified here. July 1998 Groundwater Report indicates groundwater contamination beneath or near these various AOCs.
- (16) U.S. EPA Preliminary Assessment Report (PA) dated October 9, 1992, identified six significant SWMUs, five of which were RCRA units. The six significant SWMUs were identified as Treatment Units 101, 109 and 115; Test Cells PRL, 1 and 9; Area 111 (aka HWSA A); and a generator (less than 90 days storage) storage area located north of Building 21. The PA also identified numerous AOCs: Paint booths in Buildings 3, 21, 23/23A and 109; 16 underground storage tanks; Machining units in Buildings 3, 21, 109 with sumps; 1,1,1-TCA aboveground tanks and drums in Buildings 3, 31, 109 and 115 with sumps; Clarifiers located near Buildings 3, 23/23A and 103; 2-150 gallon hydrazine tanks located west of Area 111 (HWSA A); Waste oil/coolant recycling area located northeast of Building 3A with drums and 1500 gallon aboveground storage tank; hydraulic expansion units near Buildings 3A and 3; and Former Building 65 which was replaced with Buildings 115 and 116. July 1998 Groundwater Report indicates groundwater contamination beneath or near the various SWMUs and AOCs identified in the PA.
- (17) Building 43 - Diesel and jet fuel soil contamination.
- (18) Phillips Area - Southeast corner of facility, 1 underground storage tank removed in 1986. Organic lead contamination found in east end. [AOC 3.1.44 from the 1991 RFA/PR]
- (19) Building 1 Fuel Area - Former underground storage area for 8 tanks which were removed in 1986. The 8 tanks once held various jet fuels, kerosene, gasoline (leaded and unleaded) and diesel fuels. [AOC 3.1.36 - 3.1.43 from the 1991 RFA/PR]

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- (20) Building 38 - Closed in place a 4,000 gallon underground storage tank in 1986. [AOC 3.1.32 from the 1991 RFA/PR]
- (21) 550 gallon underground tank removed in 1957 from the 300SNPL and 525 WEPL area. [AOC 3.1.45 from the 1991 RFA/PR]
- (22) Building 101 - Degreaser unit for 1,1,1-TCA, vapor spray type and 1,500 gallon 1,1,1-TCA storage tank. July 1998 Groundwater Report indicates groundwater contamination beneath, near or around the area of this building. [listed in SCAQMD permit, Attachment 4 of RFA/PR]
- (23) Used oil storage tank and clarifier near structure or building 29 east of Building 116. 1000 gallon TCA tank and associated sumps in Building 116.
- (24) TCA tank, ordnance manufacturing, machining and painting in Building 115
- (25) Ordnance testing and storage areas in the Building 117 Underground cistern, paint and solvent use or storage in former Building 117.
- (26) Manufacturing, storage and shipping in Building 95.
- (27) Maintenance shop, garage, vacuum furnace, heat treating and shot blast machine areas in Building 95A.
- (28) Explosive Storage in Building 112
- (29) Former UST near Building 29
- (30) Clarifier near Building 101.
- (31) Clarifier near Building 27
- (32) AOC - Maintenance Storage in Building 7
- (33) Machine shop, paint shop and cure oven in Building 3A
- (34) Building 21A-109 - Storage and ordnance pack out areas.

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- (35) Building 23A - Clarifier
- (36) Building 23 - Clarifier and paint booths.
- (37) Building 54 - Test Cell 8
- (38) Building 49 - Substation
- (39) AOC Building 47 - Water Cooling Tower
- (40) Building 45 - Paint storage
- (41) Building 31 - Chemical Process Area, TCA tank.
- (42) Building 2 - Machine shop.
- (43) AOC Building 26 - Photo Lab, VOCs detected
- (44) Building 37 - Fuel conditioning equipment building
- (45) Building 44 - Ordnance area
- (46) Building 34 - Cooling tower.
- (47) Building 32 - Clean room operations
- (48) Building 42 - Metallurgy Laboratory
- (49) Building 102 - Wind tunnel with diesel engines
- (50) Building 39 - Substation
- (51) Building 61 - Substation
- (52) Building 3 - Machine shop, chemical process area, welding, paint booths, TCA tanks, clarifier
- (53) AOC Building 56 - Paint Storage

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- (54) Building or structure 104 - Drum Storage Area
- (55) Building 111 - Hazardous waste handling area
- (56) Building 84 - Clarifier
- (57) Building 55 - Testing Area
- (58) Building 28 - Shooting Range

ATTACHMENT 5

ESTIMATED HOURS, COSTS, AND SCOPE OF WORK FOR CORRECTIVE ACTION AT THE MARQUARDT COMPANY, VAN NUYS

I. RFI WORKPLAN REVIEW

Project Manager and support staff reviews the Current Conditions Report, RFI Workplan, Health and Safety Plan, and prepares and issues a Notice of Deficiency (NOD); reviews and approves revised RFI Workplan, and Current Conditions Report; coordinates with Public Participation staff in the amendment of the Community Profile and/or RFI Summary Fact Sheet.

ESTIMATED COST FOR RFI WORKPLAN REVIEW			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	405	86.00	34,830.00
Supervisor	10	99.00	990.00
Geologist	80	95.00	7,600.00
Senior Geologist	8	109.00	872.00
Toxicologist	40	122.00	4,880.00
Senior Toxicologist	1	134.00	134.00
Industrial Hygienist	24	90.00	2,160.00
Senior Industrial Hygienist	1	103.00	103.00
Public Participation Specialist	30	84.00	2,520.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	4	46.00	184.00
SUBTOTAL	608		54,978.00

II. RFI OVERSIGHT

Project Manager and support staff visit the facility to take split samples, and review progress reports.

ESTIMATED COST FOR RFI OVERSIGHT			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	240	86.00	20,640.00
Supervisor	10	99.00	990.00
Geologist	70	95.00	6,650.00
Senior Geologist	4	109.00	436.00
Industrial Hygienist	3	90.00	270.00
SUBTOTAL	327		28,986.00

III. RFI REPORT REVIEW/APPROVAL

Project Manager and support staff review RFI Report, issues NOD, reviews/approves revised RFI report and determines whether Corrective Measure Study (CMS), Interim Measure (IM) or no further action is warranted.

ESTIMATED COST FOR RFI REPORT REVIEW/APPROVAL			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	225	86.00	19,350.00
Supervisor	10	99.00	990.00
Geologist	70	95.00	6,650.00
Senior Geologist	8	109.00	872.00
Toxicologist	70	122.00	8,540.00
Senior Toxicologist	1	134.00	134.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	4	46.00	184.00
SUBTOTAL	393		37,425.00

IV. INTERIM MEASURES (IM)

Project Manager and support staff review IM Workplan, along with amended Community Profile; issues NOD; reviews/approves revised IM Workplan; reviews Operation and Maintenance Plan (O&MP) and IM Plans and Specifications (P&S); issues NOD on IM O&MP and IM P&S.

ESTIMATED COST FOR INTERIM MEASURES			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	390	86.00	33,540.00
Supervisor	10	99.00	990.00
Geologist	70	95.00	6,650.00
Senior Geologist	8	109.00	872.00
Industrial Hygienist	24	90.00	2,160.00
Sr. Industrial Hygienist	1	103.00	103.00
Public Participation Specialist	10	84.00	840.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	4	46.00	184.00
SUBTOTAL	522		46,044.00

V. RISK ASSESSMENT

Project Manager coordinates and reviews Risk Assessment with Toxicologist and Geologists. The task will include review of the following: Facility Characterization, Chemical Identification, Exposure Assessment, Toxicity Assessment, Risk Characterization, Ecological Risk Assessment, and Action Levels/Media Cleanup Standards.

ESTIMATED COST FOR RISK ASSESSMENT			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	168	86.00	14,448.00
Supervisor	20	99.00	1,980.00
Geologist	40	95.00	3,800.00
Senior Geologist	8	109.00	872.00
Toxicologist	200	122.00	24,400.00
Senior Toxicologist	16	134.00	2,144.00
Word Processing Tech	4	46.00	184.00
SUBTOTAL	456		47,828.00

VI. CORRECTIVE MEASURE STUDY (CMS) WORKPLAN

Project Manager reviews CMS Workplan (Treatability Study may be required in the Workplan). issues NOD, reviews/approves revised CMS Workplan, visits the Facility if Treatability Study is conducted, reviews Progress Reports, reviews CMS reports, issues NOD on CMS Report review, reviews/approves revised CMS Report, coordinates with Public Participation staff in the preparation of a Fact Sheet regarding potential remedial alternatives (community meeting might be necessary).

ESTIMATED COST FOR CORRECTIVE MEASURE STUDY WORKPLAN			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	495	86.00	42,570.00
Supervisor	20	99.00	1,980.00
Branch Chief	4	120.00	480.00
Geologist	70	95.00	6,650.00
Senior Geologist	8	109.00	872.00
Industrial Hygienist	1	90.00	90.00
Public Participation Specialist	10	84.00	840.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	8	46.00	368.00
SUBTOTAL	621		54,555.00

VII. REMEDY SELECTION AND NOTICE OF DECISION

Project Manager evaluates proposed remedies, and media cleanup standards presented in the approved CMS Report. Based on the evaluation, DTSC may propose a corrective measure(s) for implementation at the facility. Project Manager coordinates with Public Participation staff in the public notice preparation.

ESTIMATED COST FOR REMEDY SELECTION & NOTICE OF DECISION			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	240	86.00	20,640.00
Supervisor	10	99.00	990.00
Branch Chief	8	120.00	960.00
Geologist	70	95.00	6,650.00
Senior Geologist	8	109.00	872.00
Public Participation Specialist	20	84.00	1,680.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	6	46.00	276.00
SUBTOTAL	367		32,773.00

VIII. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Project Manager prepares CEQA Initial Study, and Negative Declaration, coordinates with Public Participation Staff in the following Public Notice preparation: Fact Sheet, radio announcement, Public Notice, newspaper advertisement, mass duplication and mailing, public hearing presentation, if necessary, and responds to public comments.

ESTIMATED COST FOR CEQA			
	HOURS	APPROX. RATE/HOUR	AMOUNT
Project Manager	80	86.00	6,880.00
Supervisor	10	99.00	990.00
Branch Chief	1	120.00	120.00
Geologist	4	95.00	380.00
Senior Geologist	1	109.00	109.00
Toxicologist	4	122.00	488.00
Public Participation Specialist	4	84.00	336.00
Assoc. Environmental Planner	15	88.00	1,320.00
Senior Environmental Planner	1	118.00	118.00
Staff Counsel III	5	141.00	705.00
Word Processing Tech	10	46.00	460.00
SUBTOTAL	135		11,906.00

IX. CORRECTIVE MEASURES IMPLEMENTATION

Project Manager oversees the implementation of the corrective measures.

ESTIMATED COST FOR CORRECTIVE MEASURES IMPLEMENTATION			
	HOURLS	APPROX. RATE/HOUR	AMOUNT
Project Manager	70	86.00	6,020.00
Supervisor	7	99.00	693.00
Branch Chief	1	120.00	120.00
Geologist	60	95.00	5,700.00
Senior Geologist	5	109.00	545.00
Word Processing Tech	4	46.00	184.00
SUBTOTAL	147		13,262.00

SUMMARY	
I INTERIM MEASURES (IM)	54,978.00
II INTERIM MEASURES OVERSIGHT	28,986.00
III RFI WORKPLAN REVIEW	37,425.00
IV RFI OVERSIGHT	46,044.00
V RISK ASSESSMENT	47,828.00
VI CMS WORKPLAN REVIEW	54,555.00
VII REMEDY SELECTION AND NOTICE OF DECISION	32,773.00
VIII CALIFORNIA ENVIRONMENTAL QUALITY ACT	11,906.00
IX CORRECTIVE MEASURES IMPLEMENTATION	13,262.00
Total (I-XII)	327,757.00
Project Management (10% Total)	32,775.70
Subtotal (Total (I-XII) + Project Management)	360,532.70
Contingency (20% Subtotal)	72,106.54
GRAND TOTAL (Subtotal + Contingency)	432,639.24

ATTACHMENT 6

SCOPE OF WORK FOR INTERIM MEASURES IMPLEMENTATION

PURPOSE

Interim measures are actions to control and/or eliminate releases of hazardous waste and/or hazardous constituents from a facility prior to the implementation of a final corrective measure. Interim measures must be used whenever possible to achieve the goal of stabilization which is to control or abate threats to human health and/or the environment, and to prevent or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

SCOPE

The documents required for Interim Measures (IM) are, unless the Department specifies otherwise, an IM Workplan, an Operation and Maintenance Plan and IM Plans and Specifications. The scope of work (SOW) for each document is specified below. The SOW's are intended to be flexible documents capable of addressing both simple and complex site situations. If the Permittee Respondent can justify, to the satisfaction of the Department, that a plan or portions thereof are not needed in the given site specific situation, then the Department may waive that requirement.

The scope and substance of interim measures should be focused to fit the site specific situation and be balanced against the need to take quick action.

The Department may require the Permittee/Respondent to conduct additional studies beyond what is discussed in the SOW's in order to support the IM program. The Permittee/Respondent will furnish all personnel, materials and services necessary to conduct the additional tasks.

A. Interim Measures Workplan

The Permittee/Respondent shall prepare an IM Workplan that evaluates interim measure options and clearly describes the proposed interim measure, the key components or elements that are needed, describes the designers vision of the interim measure in the form of conceptual drawings and schematics, and includes procedures and schedules for

implementing the interim measure(s). The IM Workplan must be approved by the Department prior to implementation. The IM Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary of the project.

2. Conceptual Model of Contaminant Migration

It is important to know where the contaminants are and to understand how they are moving before an adequate interim measure can be developed. To address this critical question, the Permittee/Respondent must present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water volatility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to groundwater, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document.

3. Evaluation of Interim Measure Alternatives

List, describe and evaluate interim measure alternatives that have the potential to stabilize the facility. Propose interim measures for implementation and provide rationale for the selection. Document the reasons for excluding any interim measure alternatives.

4. Description of Interim Measures

Qualitatively describe what the proposed interim measure is supposed to do and how it will function at the facility.

5. Data Sufficiency

Review existing data needed to support the design effort and establish whether or not there is sufficient accurate data available for this purpose. The Permittee/Respondent must summarize the assessment findings and specify any additional data needed to complete the interim measure design. The Department may require or the Permittee/Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans must be included in the project schedule.

6. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will direct the interim measure design and implementation effort (including contractor personnel).

7. Project Schedule

The project schedule must specify all significant steps in the process, when any key documents (e.g., plans and specifications, operation and maintenance plan) are to be submitted to the Department and when the interim measure is to be implemented.

8. Design Basis

Discuss the process and methods used to design all major components of the interim measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.

9. Conceptual Process/Schematic Diagrams.

10. Site plan showing preliminary plant layout and/or treatment area.

11. Tables listing number and type of major components with approximate dimensions.

12. Tables giving preliminary mass balances.

13. Site safety and security provisions (e.g., fences, fire control, etc.).

14. Waste Management Practices

Describe the wastes generated by the construction of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

15. Required Permits

List and describe the permits needed to construct the interim measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

16. Sampling and monitoring activities may be needed for design and during construction of the interim measure. If sampling activities are necessary, the IM Workplan must include a complete sampling and analysis section which specifies the following information:

- a. Description and purpose of monitoring tasks;
- b. Data quality objectives;
- c. Analytical test methods and detection limits;
- d. Name of analytical laboratory;
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment;
- g. Field quality control procedures:
 - * duplicates (lot of all field samples)
 - * blanks (field, equipment, etc.)
 - * equipment calibration and maintenance
 - * equipment decontamination
 - * sample containers
 - * sample preservation
 - * sample holding times (must be specified)
 - * sample-packaging and shipment
 - * sample documentation (field notebooks, sample labeling, etc.);
- h. Criteria for data acceptance and rejection; and
- i. Schedule of monitoring frequency.

The Permittee/Respondent shall follow all EPA guidance for sampling and analysis. The Department may request that the sampling and analysis section be a separate document.

17. Appendices including:

Design Data - Tabulations of significant data used in the design effort;

Equations - List and describe the source of major equations used in the design process;

Sample Calculations - Present and explain one example calculation for significant calculations; and

Laboratory or Field Test Results.

B. Interim Measures Operation and Maintenance Plan

The Permittee/Respondent shall prepare an Interim Measures Operation and Maintenance (O&M) Plan that includes a strategy and procedures for performing operations, maintenance, and monitoring of the interim measure(s). An Interim Measures Operation and Maintenance Plan shall be submitted to the Department simultaneously with the Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

1. Purpose/Approach

Describe the purpose of the document and provide a summary of the project.

2. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will operate and maintain the interim measure(s) (including contractor personnel).

3. **System Description**

Describe the interim measure and identify significant equipment.

4. **Personnel Training**

Describe the training process for O&M personnel. The Permittee/Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

5. **Start-Up Procedures**

Describe system start-up procedures including any operational testing.

6. **Operation and Maintenance Procedures**

Describe normal operation and maintenance procedures including:

- a. Description of tasks for operation;
- b. Description of tasks for maintenance;
- c. Description of prescribed treatment or operation conditions; and
- d. Schedule showing frequency of each O&M task.

7. **Replacement schedule for equipment and installed components.**

8. **Waste Management Practices**

Describe the wastes generated by operation of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

9. **Sampling and monitoring activities may be needed for effective operation and maintenance of the interim measure. If sampling activities are necessary, the O&M plan must include a complete sampling and analysis section which specifies the following information:**

- a. Description and purpose of monitoring tasks;
- b. Data quality objectives;
- c. Analytical test methods and detection limits;
- d. Name of analytical laboratory;
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment;
- g. Field quality control procedures:
 - * duplicates (10% of all field samples)
 - * blanks (field, equipment, etc.)
 - * equipment calibration and maintenance
 - * equipment decontamination
 - * sample containers
 - * sample preservation
 - * sample holding times (must be specified)
 - * sample packaging and shipment
 - * sample documentation (field notebooks, sample labeling, etc.);
- h. Criteria for data acceptance and rejection; and
- i. Schedule of monitoring frequency.

The Permittee/Respondent shall follow all EPA guidance for sampling and analysis. The Department may request that the sampling and analysis section be a separate document.

10. OEM Contingency Procedures:

- a. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures;
- b. Should the interim measure suffer complete failure, specify alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and/or the environment or exceed cleanup standards; and
- c. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the interim measure (includes emergency situations), the Permittee/Respondent will orally notify the Department

within 24 hours of the event and will notify the Department in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and the environment.

11. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The O&M Plan shall specify that the Permittee/ Respondent collect and maintain the following information:

- a. Progress Report Information
 - * Work Accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.).
 - * Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.).
- b. Monitoring and laboratory data;
- c. Records of operating costs; and
- d. Personnel, maintenance and inspection records.

The Department may require that the Permittee/ Respondent submit additional reports that evaluate the effectiveness of the interim measure in meeting the stabilization goal.

C. IM Plans and Specifications

The Permittee/Respondent shall prepare Plans and Specifications for the interim measure that are based on the conceptual design but include additional detail. The Plans and Specifications shall be submitted to the Department simultaneously with the Operation and Maintenance Plan. The design package must include drawings and specifications

needed to construct the interim measure. Depending on the nature of the interim measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

General Site Plans
Process Flow Diagrams
Mechanical Drawings
Electrical Drawings
Structural Drawings
Piping and Instrumentation Diagrams
Excavation and Earthwork Drawings
Equipment Lists
Site Preparation and Field Work Standards
Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to the Department, the Permittee/Respondent shall:

- a. Proofread the specifications for accuracy and consistency with the conceptual design; and
- b. Coordinate and cross-check the specifications and drawings.

ATTACHMENT 7

SCOPE OF WORK FOR HEALTH AND SAFETY PLAN

The Department of Toxic Substances Control ("Department" or "DTSC") may require that the Owner/Operator or Respondent prepare a Health and Safety Plan for any corrective action field activity (e.g., soil or ground water sampling, drilling, construction, operation and maintenance of a treatment system, etc.). The Health and Safety Plan must, at a minimum, include the following elements:

A. Objectives

Describe the goals and objectives of the Health and Safety Plan (must apply to on-site personnel and visitors). The Health and Safety Plan must be consistent with the facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous waste Site Activities (1985), all state and local regulations and other DTSC guidance as provided.

B. Hazard Assessment

List and describe the potentially hazardous substances that could be encountered by field personnel during field activities.

Discuss the following:

- Inhalation Hazards
- Dermal Exposure
- Ingestion Hazards
- Physical Hazards
- Overall Hazard Rating

Include a table that, at a minimum, lists: Known Contaminants, Highest Observed Concentration, Media, Symptoms/Effects of Acute Exposure

C. Personal Protection/Monitoring Equipment

For each field task, describe personal protection levels and identify all monitoring equipment.

Describe any action levels and corresponding response action (i.e., when will levels of safety be upgraded).

Describe decontamination procedures and areas.

D. Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a facility Map showing emergency station locations (first aid, eye wash areas, etc.).

ATTACHMENT 8

COMMUNITY PROFILE OUTLINE

The following items should be included in the Community Profile:

SITE DESCRIPTION

- Description of proposed project.
- Map.
- Description of the site/facility location.
- Description of the surrounding land uses and environmental resources (including proximity to residential housing, schools, churches, etc.).
- Visibility of the site to neighbors.
- Demographics of community in which the site is located (e.g., socioeconomic level, ethnic composition, specific language considerations, etc.). is information may be found in local libraries (e.g., census records).

LOCAL INTEREST

- Contacts with community members - any inquiries from community members, groups, organizations, etc. (include names, phone numbers, and addresses on the key contact list).
- Community interactions - any current meetings, events, presentations, etc.
- Media coverage - any newspaper, magazine, television, etc., coverage.
- Government contacts - city and county staff, state and local elected officials.

KEY CONTACT LIST

- Names, addresses, and phone numbers of city manager, city/county planning department staff, local elected officials, and other community members with whom previous contact has been made.

PAST PUBLIC INVOLVEMENT ACTIVITIES

- Any ad hoc committees, community meetings, workshops, letters, newsletters, etc., about the site or similar activity.

KEY ISSUES AND CONCERNS

- Any specific concerns/issues raised by the community regarding the site/facility or any activities performed on the site/facility.
- Any anticipated concerns/issues regarding the site/facility.
- Any general environmental concerns/issues in the community.

PP Review _____ Date _____

ATTACHMENT 9

SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION (RFI)

PURPOSE

The purpose of the RCRA Facility Investigation (RFI) is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at a facility and to gather all necessary data to support a Corrective Measures Study. The Permittee/Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI.

SCOPE

The RCRA Facility Investigation is one step in the corrective action program. The RFI consists of the following components, which for clarity have been designated as sections.

Section I: Description of Current Conditions

- A. Facility Background
- B. Preliminary Assessment of Nature and Extent of Contamination
- C. Implementation of Interim/Stabilization Measures

Section II: RFI Workplan

- A. Purpose/Objectives
- B. Project Management
- C. Data Collection/Quality Assurance
- D. Data Management and Reporting
- E. Health and Safety Plan
- F. Public Involvement Plan

G. Schedule for Facility Investigation

Section III: Facility Investigation

- A. Purpose/Objectives
- B. Environmental Setting
- C. Source Characterization
- D. Contamination Characterization
- E. Potential Receptor Identification

Section IV: Preliminary Evaluation of Corrective Measure Technologies by Laboratory or Bench-Scale Studies

Section V: Investigation Results and Analysis

- A. Data Analysis
- B. Media Cleanup Standards
- C. Analysis of Risk

Section VI: Progress Reports

Section VII: Proposed Schedule

Section I: Description of Current Conditions

The Permittee/Respondent shall submit, for Department approval, a report (as set forth below) providing the background information on the facility, contamination, and interim measures. The Permittee/Respondent shall indicate in the applicable section if some of this information is not available. This report shall contain information that is consistent with the data gathered during the RFA (and the release assessment, if performed). The current condition report shall be submitted prior to, or concurrently with, the submission of the RFI to allow the Department time to review it.

A. Facility Background

The Permittee's/Respondent's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid and hazardous waste. The Permittee's/Respondent's report shall include:

1. Map(s). For permitted facilities, all maps shall be consistent with the requirements set forth in 40 CFR 5270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the site. (Aerial photographs should be included with SWMUs and AOCs superimposed on them.) Maps shall depict the following (to the extent not already included in map requirements under 40 CFR 5270.14 (b)(19) for permitted facilities):
 - General geographic location;
 - Property lines, with the owners of all adjacent property clearly indicated;
 - Topography and surface drainage (with a contour interval of [number] feet and a scale of 1 inch = 100 feet) depicting all waterways, wetlands, flood plains, water features, drainage patterns, and surface-water containment areas;
 - All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
 - All solid or hazardous waste treatment, storage, or disposal areas active after November 19, 1980;

- All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on or after November 19, 1980;
 - All known past and present product and waste underground tanks or piping;
 - Surrounding land uses (residential, commercial, industrial, agricultural, recreational);
 - The location of all production and groundwater monitoring wells on the facility and within a 2-mile radius of the facility boundary. These wells shall be clearly labeled and ground and top of casing elevations and construction details included (these elevations and details may be included as an attachment); and
 - Wind rose and meteorology.
2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.
 3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response.
 4. A summary of past permits applied for and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the facility. This may include information from previous owner/operators, if available.

B. Preliminary Assessment of Nature and Extent of Contamination

The Permittee/Respondent shall prepare and submit, for Department approval, a preliminary report describing the existing information on the nature and extent of contamination.

1. The Permittee's/Respondent's report shall summarize all possible source areas of contamination. This, at a minimum, shall include all RCRA-regulated units, solid

waste management units, spill areas, and other suspected source areas of contamination. For each area, the Permittee/Respondent shall identify the following:

- Location of unit/area (to be depicted on facility map provided in Section I);
- Quantities of solid and hazardous wastes (both managed and spilled or released);
- Type of Hazardous waste or constituents (both causing or potentially causing contamination), to the extent known;
- Identification of areas where additional information is necessary; and
- The results of both the RCRA Facility Assessment (RFA) and a summary of suggested further actions for all SWMUs and Areas of Concern (AOCs) and the release assessment (if performed).

2. The Permittee/Respondent shall prepare a preliminary assessment and description of the existing degree and extent of contamination. This shall include:

- For each medium where the permit or order identifies a release (e.g., soil, ground water, surface water, air, etc.), a description of the existing extent of contamination. This description must include all available monitoring data and qualitative information on the locations and levels of contamination at the facility (both onsite and offside). Include biodata (e.g., fishkills, distressed vegetation, abnormal individuals of a species, carcasses, tissue studies, etc.). Include a general assessment of the data quality, a map showing the location of all existing sampling points and potential source areas and contour maps showing any existing ground water plumes at the facility (if ground water release). Highlight potential ongoing release areas that would warrant use of interim corrective measures (see Paragraph C. Implementation of Interim/Stabilization Measures).
- A list and brief description of all previous investigations that have occurred at the facility, who they were conducted for (i.e., agency) and agency contacts.

3. The Permittee/Respondent shall prepare a preliminary assessment and description of potential migration pathways. This shall include:
 - All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, foodwebs, meteorology, and air quality;
 - Physical properties of contaminants; and
 - An assessment of whether off-site migration of contaminants has occurred, (may include a conceptual model of contaminant migration) .
4. The Permittee/Respondent shall describe the potential impact(s) on human health and the environment, including demography, identification of possible sensitive subpopulations (e.g., schools, homes for the elderly, hospitals and ecosystems), ground water and surface water use, and land use.

C. Implementation of Interim/Stabilization Measures

The Permittee's/Respondent's report shall document past, present, or proposed interim stabilization measures at the facility. This shall include:

- Objectives of the interim/stabilization measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long-term solution at the facility;
- Design, construction, operation, and maintenance requirements;
- Schedules for design, construction and monitoring;
- Schedule for progress reports; and
- Data in support of the potential need for future interim measures or related to any assessment undertaken to determine the need for future interim/stabilization measures.

Section II: RFI Workplan

A. Purpose/Objectives

The Permittee/Respondent shall prepare an RFI Workplan. The purpose of the RFI Workplan is to present to the Department the Permittee's/Respondent's specific plans to characterize the nature and extent of contamination. This RFI Workplan shall include the development of several plans, which shall be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate facility-specific situations.

B. Project Management

The Permittee/Respondent shall prepare a Project Management Plan, which will include a discussion of the technical approach, schedules, (including submittal of the CMS Workplan, if required), budget, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

C. Data Collection/Quality Assurance

To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee/Respondent shall prepare a Quality Assurance Project Plan (QAPjP) to document all monitoring procedures, sampling, field measurements and sample analyses performed during the investigation to characterize the environmental setting, source, and contaminations. The Permittee/Respondent shall use quality assurance, quality control, and chain-of-custody procedures approved by the Department.

These procedures are described in the soon to be released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5), which will replace Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, (QAMSX05/80, December 29, 1980). The minimum elements of a quality assurance program for data collection activities are in Chapter One of SW-846 [see Appendix B] and are outlined below.

1.0 INTRODUCTION

2.0 QA PROJECT PLAN

- 2.1 Data Quality Objectives
- 2.2 Project Objectives
- 2.3 Sample Collection
- 2.4 Analysis and Testing
- 2.5 Quality Control
- 2.6 Project Documentation
- 2.7 Organization Performing Field or Laboratory Operations
 - 2.7.1 Performance Evaluation
 - 2.7.2 Internal Assessment by QA Function
 - 2.7.3 External Assessment
 - 2.7.4 On-Site Evaluation
 - 2.7.4.1 Field Activities
 - 2.7.4.2 Laboratory Activities
 - 2.7.5 QA Reports
- 3.0 FIELD OPERATIONS
 - 3.1 Field Logistics
 - 3.2 Equipment/Instrumentation
 - 3.3 Operating Procedures
 - 3.3.1 Sample Management
 - 3.3.2 Reagent/Standard Preparation
 - 3.3.3 Decontamination
 - 3.3.4 Sample Collection
 - 3.3.5 Field Measurements
 - 3.3.6 Equipment Calibration and Maintenance
 - 3.3.7 Corrective Action
 - 3.3.8 Data Reduction and Validation
 - 3.3.9 Reporting
 - 3.3.10 Records Management
 - 3.3.11 Waste Disposal
 - 3.4 FIELD QA AND QC REQUIREMENTS
 - 3.4.1 Control Samples
 - 3.4.2 Acceptance Criteria
 - 3.4.3 Deviations
 - 3.4.4 Corrective Action
 - 3.4.5 Data Handling
 - 3.5 QUALITY ASSURANCE REVIEW
 - 3.6 FIELD RECORDS

4.0 LABORATORY OPERATIONS

- 4.1 FACILITIES
- 4.2 EQUIPMENT/INSTRUMENTATION
- 4.3 OPERATING PROCEDURES
 - 4.3.1 Sample Management
 - 4.3.2 Reagent/Standard Preparation
 - 4.3.3 General Laboratory Techniques
 - 4.3.4 Test Methods
 - 4.3.5 Equipment Calibration and Maintenance
 - 4.3.6 QC
 - 4.3.7 Corrective Action
 - 4.3.8 Data Reduction and Validation
 - 4.3.9 Reporting
 - 4.3.10 Records Management
 - 4.3.11 Waste Disposal
- 4.4 LABORATORY QA AND QC PROCEDURES
 - 4.4.1 Method Proficiency
 - 4.4.2 Control Limits
 - 4.4.3 Laboratory Control Procedures
 - 4.4.4 Deviations
 - 4.4.5 Corrective Action
 - 4.4.6 Data Handling
- 4.5 QUALITY ASSURANCE REVIEW
- 4.6 LABORATORY RECORDS

D. Data Management and Reporting

The Permittee Respondent shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and establish data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and Documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- Unique sample or field measurement code;

- Sampling or field measurement location and sample or measurement type;
- Sampling or field measurement raw data;
- Laboratory analysis ID number;
- Property or component measured; and
- Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

- Unsorted (raw) data;
- Results for each medium or for each constituent monitored;
- Data reduction for statistical analysis;
- Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects three dimensional graphs, etc.):

- Sampling location and sampling grid;
- Boundaries of sampling area, and areas where additional data are required;
- Levels of contamination at each sampling location;
- Geographical extent of contamination;
- Contamination levels, averages, and maxima;

- Changes in concentration in relation to distance from the source, time, depth or other parameters;
- Features affecting intramedia transport; and
- Potential receptors.

E. Health and Safety Plan

The Permittee/Respondent shall submit a Health and Safety Plan for all field activity, although it does not require review and approval by the Department. The Health and Safety Plan shall be developed as a stand alone document but may be submitted with the RFI Workplan.

Major elements of the Health and Safety Plan shall include:

- Facility description including availability of resources such as roads, water supply, electricity, and telephone service;
- Description of the known hazards and evaluation of the risks associated d with each activity conducted;
- A list of key personnel and alternates responsible for site safety, response operations, and protection of public health;
- Delineation of work area;
- Description of protective clothing or other protective items to be worn by personnel in work area;
- Procedures to control site access;
- Description of decontamination procedures for personnel and equipment;
- Site emergency procedures;
- Emergency medical care needed for injuries and toxicological problems;
- Description of requirements for an environmental surveillance program;

- Routine and special training required for response personnel; and
 - Procedures for protecting workers from weather-related problems.
2. The Facility Health and Safety Plan shall be consistent with:
- NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 - EPA Order 1440.1- Respiratory Protection;
 - EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
 - Facility Contingency Plan;
 - EPA Standard Operating Safety Guide (1984);
 - OSHA regulations particularly in 29 CFR 1910 and 1926;
 - State and local regulations; and
 - Other applicable EPA guidance as provided.

F. Public Involvement Plan

All Public Involvement Plans prepared by the Permittee/Respondent shall be submitted to the Department for comment and approval prior to use. Permittees/Respondents must never appear to represent or speak for the Department before the public, other government officials, or the media.

Public Involvement activities that may be required of the Permittee/Respondent include the following:

1. Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to agency officials and Permittee/Respondent on a one-to-one basis;

2. Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the Department prior to public distribution);
3. Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
4. Maintaining an easily accessible repository (such as a town hall or public library or the facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order or permit, approved workplans, and/or other reports.

A schedule for community relations activities shall be included in the Public Involvement Plan.

G. Schedule for Facility Investigation

1. Sampling
2. Analysis
3. Reports
4. Public Involvement Activities
5. Laboratory or Bench-Scale Studies

Section III: Facility Investigation

A. Purpose/Objectives

The Facility Investigation phase of an RFI is the first step of the implementation process. Prior to this implementation phase, all documentation and reports for the Description of Current Conditions and RFI Workplan are drafted and submitted to the Department for review and approval. The Permittee/Respondent must have approval prior to implementing the procedures outlined in the RFI Workplan. Throughout the RFI implementation phase, it is critical that the Permittee/Respondent comply with report

submission requirements. The Permittee/Respondent shall submit both progress reports and a draft RFI Report, which must be submitted to the Department for review. At the direction of the Department, the Permittee/Respondent shall develop in final format the RFI Report, which will incorporate any comments received on the draft report:

The Permittee/Respondent shall conduct those investigations (including sampling) as approved in the RFI Workplan with all modifications to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and three dimensional extent of contamination (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative(s) during the Corrective Measures Study (CMS) and/or ISMs.

The site investigation activities (including sampling) shall follow the plans set forth in the RFI Workplan.

B. Environmental Setting

The Permittee/Respondent shall collect information to supplement and verify existing information on the environmental setting at the facility (when information already submitted to the Department is not sufficient). The Department may request additional information not included on the following lists. The Permittee/Respondent shall characterize the following areas (the Department should require characterization of some or all of the following areas depending on the specifics of the site):

1. Hydrogeology

The Permittee/Respondent shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- A description of the regional and facility-specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
 - Regional and facility-specific stratigraphy including: description of strata including strike and dip, and identification of stratigraphic contacts;

- Structural geology including: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - Depositional history;
 - Areas and amounts of recharge and discharge;
 - Influence of tidal actions on groundwater flow regimes near coastal areas or large rivers;
 - Regional and facility-specific ground-water flow patterns; and
 - Seasonal variations in the ground-water flow regime.
- An analysis of any topographic features that might influence the ground-water flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis.)
 - A representative and accurate classification and description of the hydrogeologic units based on field data, tests, and cores that may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated zones), including, but not limited to:
 - Hydraulic conductivity, intrinsic permeability (particularly when non-aqueous phase liquids WAPLs) are present), and porosity (total and effective);
 - Lithology, grain size, sorting, degree of cementation;
 - An interpretation of hydraulic interconnections between saturated zones; and
 - The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
 - Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units that may be part of the migration pathways identifying:

- Sand and gravel in unconsolidated deposits;
 - Zones of fracturing or channeling in consolidated and unconsolidated deposits;
 - Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;
 - The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs;
 - Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration, including perched zones of saturation; and
 - All other geologic formations, or parts thereof, yielding a significant amount of ground water.
- Based on data obtained from ground-water monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - Water level contour and/or potentiometric maps;
 - Hydrologic cross sections showing vertical flow gradients;
 - The flow system, including the vertical and horizontal components of flow; and
 - Any temporal changes in hydraulic gradients, (due to tidal or seasonal influences, etc.)
 - A description of man-made influences that may affect the hydrogeology of the site, identifying:
 - Active and inactive local water-supply and production wells with an approximate schedule of pumping; and

- Man-made hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

The Permittee/Respondent shall conduct a program to characterize the soil and rock units potentially affected by contaminant release(s). Such characterization shall include, but not be limited to, the following information:

- Where remediation by removal of soils is the only corrective measure option, provide map(s) and perpendicular cross sections showing:
 - The extent of contamination;
 - Depth of groundwater; and
 - The consistency and distribution of soils (using the Unified Soil Classification System (USCS) (ASTM D 2487));
- Where remediation by removal is the likely option, and it is necessary to determine the extent of migration (e.g., to assess the mobility of wastes from an unlined surface impoundment or landfill), provide the following in addition to the requirements immediately above:
 - Depth to bedrock and the characteristics of the bedrock including discontinuities such as faults, fissures, joints, fractures, sinkholes, etc.;
 - A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:
 - USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;
 - Hydraulic conductivity and the SCS hydrologic group classification of A, B, C or D;
 - Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);

- Storage capacity (if excavated soil will be stored);
- Shrink-swell potential (where extreme dry weather could lead to the formation of cracks);
- Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;
- Soil sorptive capacity;
- Cation exchange capacity;
- Soil organic content; and
- Soil pH.

The following contaminant characteristics must be included:

- Physical state;
- Viscosity;
- pH;
- pKa;
- Density;
- Water solubility;
- Henry's Law Constant;
- Kow;
- Biodegradability; and
- Rates of hydrolysis, photolysis and oxidation.

- Where in-situ soil treatment will likely be the remediations the above information and the following additional information must be provided:
 - Bulk density;
 - Porosity;
 - Grain size distribution;
 - Mineral content;
 - Soil moisture profile;
 - Unsaturated hydraulic conductivity;
 - Effect of stratification on unsaturated flow; and
 - Infiltration and evapotranspiration.

3. Surface Water and Sediment

The Permittee/Respondent shall conduct a program to characterize the surface water bodies likely to be affected by releases from the facility. Such characterization shall include the following activities and information:

- Description of the temporal and permanent surface water bodies including:
 - For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;
 - For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year event);
 - For wetlands obtain any available delineation;
 - Containment measures in place (e.g., levees, concrete lining, etc.)

- Drainage patterns; and
- Evapotranspiration rates.
- Description of the chemistry of the natural surface water and sediments. This includes determining:
 - pH;
 - total dissolved solids;
 - total suspended solids;
 - biological oxygen demand;
 - alkalinity;
 - conductivity;
 - dissolved oxygen profiles;
 - nutrients (NH₃, NO₃ /NO₂, P₀₄);
 - chemical oxygen demand;
 - total organic carbon; and
 - specific contaminant concentrations.
- Description of sediment characteristics including:
 - Deposition area;
 - Thickness profile; and
 - Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

4. Air

The Permittee/Respondent shall provide information characterizing the climate in the vicinity of the facility. Such information shall include:

- A description of the following parameters:
 - Annual and monthly rainfall averages;
 - Monthly temperature averages and extremes;
 - Wind speed and direction;
 - Relative humidity/dew point;
 - Atmospheric pressure;
 - Evaporation data;
 - Development of inversions; and
 - Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.
- A description of topographic and man-made features that affect air flow and emission patterns, including:
 - Ridges, hills, or mountain areas;
 - Canyons or valleys;
 - Surface water bodies (e.g., rivers, lakes, bays, etc.);
 - Wind breaks and forests; and
 - Buildings.

C. Source Characterization

The Permittee/Respondent shall collect analytical data to characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of disposal); and any facility characteristics that may affecter have affected a release (e.g., facility security, engineered barriers). This shall include quantification of the following specific characteristics, at each source area;

1. Unit/Disposal Area/Area of Concern Characteristics:

- Location of unit/disposal area;
- Type of unit/disposal area;
- Design features;
- Operating practices (past and present) including the history of releases;
- Period of operation;
- Age of unit/disposal area;
- General physical conditions; and
- Method used to close the unit/disposal area.

2. Waste Characteristics:

- Type of waste placed in the unit;
 - Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - Quantity; and
 - Chemical composition.

- Physical and chemical characteristics;
 - Physical form (solid, liquid, gas);
 - Physic X description (e.g., powder, oily sludge);
 - Temperature;
 - pH;
 - General chemical class (e.g., acid, base, solvent);
 - Molecular weight;
 - Density;
 - Boiling point;
 - Viscosity;
 - Solubility in water;
 - Cohesiveness of the waste;
 - Vapor pressure; and
 - Flash point.
- Migration and dispersal characteristics of the waste;
 - Sorption;
 - Biodegradability, bioconcentration, biotransformation;
 - Photodegradation rates;
 - Hydrolysis rates; and
 - Chemical transformations.

The Permittee/Respondent shall document the procedures used in making the above determinations.

D. Contamination Characterization

The Permittee/Respondent shall collect analytical data on ground water, soils, surface water, sediment, air, and subsurface gas likely to be affected by releases from the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include:

- time and location of sampling;
- media sampled;
- concentrations found;
- conditions during sampling; and
- the identity of the individuals performing the sampling and analysis.

The Permittee Respondent shall address the following types of contamination at the facility:

1. Groundwater Contamination

The Permittee/Respondent shall conduct a groundwater investigation to characterize any plumes of contamination at the facility. This investigation shall, provide the following information:

- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- The horizontal and vertical direction of contaminant movement;
- The velocity of contaminant movement;
- The horizontal and vertical concentration profiles of Appendix IX constituents in the plume(s);
- An evaluation of factors influencing the plume movement; and

- An extrapolation of future contaminant movement over the time period specified by the Department.

The Permittee/Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Permittee/Respondent shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- A description of the vertical and horizontal extent of contamination;
- A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- Specific contaminant concentrations;
- Velocity and direction of contaminant movement; and
- An extrapolation of future contaminant movement over the time period specified by the Department.

The Permittee/Respondent shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

The Permittee/Respondent shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility. The Permittee/Respondent may also be required to characterize contamination from storm water runoff.

The investigation shall include the following information:

- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- The horizontal and vertical direction of contaminant movement;
- The contaminant velocity;
- An evaluation of the physical, biological, and chemical factors influencing contaminant movement;
- An extrapolation of future contaminant movement over the time period specified by the Department; and
- A description of the chemical and physical properties of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee/Respondent shall document the procedures used in making the above determinations.

4. Air Contamination

The Permittee/Respondent shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

- A description of the horizontal and vertical direction and velocity of contaminant movement;
- The rate and amount of the release; and
- The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

The Permittee/Respondent shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

The Permittee/Respondent shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste and hazardous constituents in the ground water. This investigation shall include the following information:

- A description of the horizontal and vertical extent of subsurface gas migration;
- The chemical composition of the gases being emitted;
- The rate, amount, and density of the gases being emitted; and
- Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Permittee/Respondent shall document the procedures used in making the above determinations.

E. Potential Receptor Identification

The Permittee/Respondent shall collect data describing the human populations and environmental systems that currently or potentially are at risk of contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be required by the Department. The following characteristics shall be identified:

1. Local uses and possible future uses of ground water:
 - Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial) and
 - Location of ground water users including wells and discharge areas.
2. Local uses and possible future uses of surface waters characterized in the "Environmental Setting" or "Contamination Characterization" Sections above:
 - Domestic and municipal (e.g., potable and lawn/gardening watering);
 - Recreational (e.g., swimming, fishing);

- Agricultural;
 - Industrial; and
 - Environmental (e.g., fish and wildlife propagation).
3. Authorized or unauthorized human use of or access to the facility and adjacent lands, including but not limited to:
- Recreation;
 - Hunting;
 - Residential;
 - Commercial;
 - Zoning; and
 - Relationship between population locations and prevailing wind direction.
4. A demographic profile of the people who use or have access (authorized or unauthorized) to the facility and adjacent land, including, but not limited to: age; sex; sensitive subgroups; and environmental justice concerns.
5. A description of the ecology of the facility and adjacent areas, including habitat and species present and expected to be present.
6. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.
7. A description of any state and federal endangered or threatened species (both proposed and listed) near the facility.

Section IV: Preliminary Evaluation of Corrective Measure Technologies by Laboratory or Bench-Scale Studies

The Permittee/Respondent may conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. These

studies may be conducted at any time during the RFI; the intent is to collect information that will be useful in evaluating potential technologies and to conduct additional studies when sufficient data is available and useful. The Permittee/Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Permittee/Respondent shall develop a testing plan identifying the type(s) and goal(s) of the study or studies, the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Permittee/Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee/Respondent shall prepare a report summarizing the testing program and its results (if studies are performed), both positive and negative.

Section V: Investigation Results and Analysis

The Permittee/Respondent shall prepare an analysis and summary of all facility investigations and their results. The investigation data should be sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study and/or ISMs.

A. Data Analysis

The Permittee/Respondent shall analyze all facility investigation data outlined in Section III and prepare a report on the type and extent of contamination at the facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area.

B. Media Cleanup Standards

The Permittee/Respondent shall provide information as required by the Department to support the agency's selection/development for media cleanup standards of any releases that may have adverse effects on human health and the environment due to migration of waste constituents. Media cleanup standards are to contain such terms and provisions as necessary to protect human health and the environment, including, the provisions stated below.

1. Ground-water Cleanup Standards

The Permittee/Respondent shall provide information to support the Department's selection/development of ground-water cleanup standards for all of the Appendix IX constituents found in the ground water during the Facility Investigation (Section III). The Department may require the following information:

- For any constituents for which an MCL has been promulgated under the Safe Drinking Water Act, the MCL value;
- Background concentration of the constituent in the ground water; or
- An alternate standard (e.g., an alternate concentration limit (ACL) for a regulated unit) to be approved by the Department.

2. Soil Cleanup Standards

The Permittee/Respondent shall provide information to support the Department's selection/development of soil cleanup standards. The Department may require the following information:

- The volume and physical and chemical characteristics of the wastes in the unit;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The existing quality of surface soils, including other sources of contamination and their cumulative impacts on surface soils;
- The potential for contaminant migration and impact to the underlying groundwater;
- The patterns of land use in the region;

- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, food chains, crops, vegetation, and physical structures caused by exposure to waste constituents.

3. Surface Water and Sediment Cleanup Standards

The Permittee/Respondent shall provide information to support the Department's selection/development of surface water and sediment cleanup standards. The Department may require the following information:

- The volume and physical and chemical characteristics of the wastes in the unit;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The quantity, quality, and direction of ground-water flow;
- The proximity of the unit to surface waters;
- The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;
- The existing quality of surface waters, including other sources of contamination and their cumulative impacts on surface waters;
- The potential for damage to domestic animals, wildlife, food chains, crops, vegetation and physical structures caused by exposure to waste constituents;
- The patterns of land use in the region; and

- The potential for health risks caused by human exposure to waste constituents.

4. Air Cleanup Standards

The Permittee/Respondent shall provide information to support the Department's selection/development of air cleanup standards. The Department may require the following information:

- The volume and physical and chemical characteristics of the wastes in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;
- The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;
- The operating characteristics of the unit;
- The atmospheric, meteorological, and topographic characteristics of the unit and the surrounding area;
- The existing quality of the air, including other sources of contamination and their cumulative impact on the air;
- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

5. Other Relevant Cleanup Standards

The Permittee/Respondent shall identify all- relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally approved state water quality standards, etc.).

C. Analysis of Risk

The Department may require the Permittee/Respondent to prepare an analysis of risk at the facility. This analysis may include ecological as well as human health risk.

Generally a baseline risk assessment would be conducted during the RFI stage with further analysis occurring during the CMS stage.

Section VI: Progress Reports

The Permittee/Respondent will, at a minimum, provide the Department with signed monthly progress reports. These reports may be required to contain the following information, but agency requirements are not limited to this list:

1. A description and estimate of the percentage of the RFI completed;
2. Summaries of all findings in the reporting period, including results of any sampling and analysis;
3. Summaries of all changes made in the RFI during the reporting period;
4. Summaries of all contacts with representative of the local community, public interest groups or State government during the reporting period;
5. Summaries of all contacts made regarding access to off-site property;
6. Summaries of all problems encountered during the reporting period;
7. Actions being taken to rectify problems;
8. Changes in relevant personnel during the reporting period;
9. Projected work for the next reporting period; and
10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Section VIII: Proposed Schedule

The Permittee/Respondent will provide the Department with RFI reports according to the following schedule:

Facility Submission

Due Date

Description of Current
Conditions
(Section I)

Within 90 days of the effective
date of this Order

RFI Workplan
(Section II)

Within 90 days of the effective
date of this Order

Draft RFI Report
(Sections III and V)

90 days after completion of
field work/lab analysis in the
approved RFI Workplan

Final RFI Report
(Sections III and V)

30 days after the Department
comments on Draft RFI Report, (date
of approval may be tied to this
submittal of the CMS Workplan, if
required,)

Laboratory and Bench-
Scale Studies
(Section IV)

30 days after Final RFI
Report

Progress Reports on
Sections I through V

MONTHLY

ATTACHMENT 10

SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY (CMS)

Purpose

The purpose of the Corrective Measures Study (CMS) portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases that have been identified at a facility.

Scope

A Corrective Measures Study Workplan and Corrective Measures Study Report are, unless otherwise specified by the Department, required elements of the CMS. The CMS consists of the following components:

Section I: Corrective Measures Study-Workplan

Section II: Corrective Measures Study Report

- A. Introduction /Purpose
- B. Description of Current Conditions
- C. Corrective Action Objectives
- D. Identification, Screening and Development of Corrective Measure Alternatives
- E. Evaluation of A Final Corrective Measure Alternative
- F. Recommendation by a Permittee/Respondent for a Final Corrective Measure Alternative
- G. Public Involvement Plan

Section III: Progress Reports

Section IV: Proposed Schedule

Section I: Corrective Measures Study Workplan

The Corrective Measures Study (CMS) Workplan may be required by the Department. If required, it shall include the following elements:

1. A site-specific description of the overall purpose of the Corrective Measure Study;
2. A description of the corrective measure objectives, including proposed target media cleanup standards. (e.g., promulgated federal and state standards, risk derived standards) and points of compliance or a description of how a risk assessment will be performed (e.g., guidance documents);
3. A description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied;
4. A description of the general approach to investigating and evaluating potential corrective measures;
5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
6. A proposed outline for the CMS Report including a description of how information will be presented; and
7. A description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and personnel. Include a description of qualifications for personnel directing or performing the work.

Section II: Corrective Measures Study Report

The Corrective Measures Study (CMS) Report shall include the following elements:

A. Introduction/Purpose

The Permittee/Respondent shall describe the purpose of the document and provide a summary description of the project.

B. Description of Current Conditions

The Permittee/Respondent shall include a brief summary discussion of any new information that has been discovered since the RFI current conditions report was finalized. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s).

C. Media Cleanup Standards

The Permittee/Respondent may propose media cleanup standards. The standards must be based on promulgated federal and state standards, risk derived standards, all data and information gathered during the corrective action process (e.g., from interim measures, RCRA Facility Investigation, etc.), and/or other applicable guidance documents. If no other guidance exists for a given contaminant and media, the Permittee/Respondent shall propose and justify a media cleanup standard.

D. Identification, Screening, and Development of Corrective Measure Alternatives

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. The Permittee/Respondent should consider including a table that summarizes the available technologies. Depending on the site-specific situation, the Department may require the Permittee/Respondent to consider additional technologies.

The Permittee/Respondent should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies. Innovative technologies are defined as those technologies utilized for remediation other than incineration, solidification/stabilization, and pumping with conventional treatment for contaminated groundwater. Innovative treatment technologies may require extra effort to gather information, to analyze options, and to adapt the technology to the site-specific situation. Treatability studies and on-site pilot scale studies may be necessary for evaluating innovative treatment technologies.

2. Screening: When the Permittee/Respondent is required to, or chooses to, evaluate a number of corrective measures technologies, the Permittee/Respondent will evaluate the technology limitations to show why certain corrective measures technologies may prove unfeasible to implement given existing waste and site-specific conditions. Likewise, if only one corrective measure alternative is being analyzed, the Permittee/Respondent must indicate any technological

limitations given waste and site-specific conditions at the facility for which it is being considered. The Permittee/Respondent should consider including a table that summarizes these findings.

3. **Corrective Measure Development:** As required by the Department, the Permittee/Respondent shall assemble the technologies that pass the screening step into specific alternatives that have potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straight-forward and may only require evaluation of a single or limited number of alternatives. Each alternative may consist of an individual technology or a combination of technologies used in sequence (i.e., treatment train). Depending on the site specific situation, different alternatives may be considered for separate areas of the facility. List and briefly describe each corrective measure alternative.

E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation, including those situations when only one remedy is being proposed, the Permittee/Respondent shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are provided below:

1. Protect human health and the environment.
2. Attain media cleanup standards set by the Department.
3. Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
4. Comply with any applicable standards for management of wastes.
5. Other Factors

In evaluating the selected alternative or alternatives the Permittee/Respondent shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this

evaluation. This guidance provides examples of the types of information that would be supportive; the Department may require additional information.

1. **Protect Human Health**

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control, or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposure to releases from an aquifer used for drinking water purposes. Another example would be a requirement for the construction of barriers or for other controls to prevent harm arising from direct contact with waste management units. Therefore, the Permittee/Respondent shall include a discussion on what types of short term remedies are appropriate for the particular facility in order to meet this standard. This information should be provided in addition to a discussion of how the other corrective measure alternatives meet this standard.

2. **Attain Media Cleanup Standards Set by the Department**

Remedies will be required to attain media cleanup standards set by the Department which may be derived from existing state or federal regulations (e.g. groundwater standards) or other standards. The media cleanup standards for a remedy will often play a large role in determining the extent of and technical approaches to the remedy. In some cases, certain technical aspects of the remedy, such as the practical capabilities of remedial technologies, may influence to some degree the media cleanup standards that are established.

As part of the necessary information for satisfying this requirement, the Permittee/Respondent shall address whether the potential remedy will achieve the preliminary remediation objective as identified by the Department as well as other, alternative remediation objectives that may be proposed by the Permittee/Respondent. The Permittee/Respondent shall also include an estimate of the time frame necessary for each alternative to meet these standards.

3. **Control the Sources of Releases**

A critical objective of any remedy must be to stop further environmental degradation by controlling or eliminating further releases that may pose a threat to human health and the environment. Unless source control measures are taken,

efforts to clean up releases may be ineffective or, at best, will essentially involve perpetual cleanup. Therefore, an effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective action program.

The source control standard is not intended to mandate a specific remedy or class of remedies. Instead, the Permittee/Respondent is encouraged to examine a wide range of options. This standard should not be interpreted to preclude the equal consideration of using other protective remedies to control the source, such as a partial waste removal, capping, slurry walls, in-situ treatment/stabilization and consolidation.

As part of the CMS Report, the Permittee/Respondent shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

4. Comply With Any Applicable Standards for Management of Wastes.

The Permittee/Respondent shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state or federal regulations (e.g., closure requirements, land disposal restrictions).

5. Other Factors

There are five general factors that will be considered as appropriate by the Department in selecting/approving a remedy that meets the four standards listed above. These factors represent a combination of technical measures and management controls for addressing the environmental problems at the facility. The five general decision factors include:

- a. Long-term reliability and effectiveness;
- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness;
- d. Implementability; and
- e. Cost.

The Department may request the Permittee/Respondent to provide additional information to support the use of these factors in the evaluation of viable remedial

alternatives. Examples of the types of information that may be requested are provided below:

a. Long-term Reliability and Effectiveness

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. The Permittee/Respondent may consider whether the technology or a combination of technologies have been used effectively under analogous site conditions whether failure of any one technology, v in the alternative would have an immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable [changes at the site (e.g., heavy rain storms, earthquakes, etc.).

Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.

- b. Reduction in the Toxicity, Mobility or Volume of Wastes As a general goal, remedies will be preferred that employ techniques, such as treatment technologies, that are capable of eliminating or substantially reducing the inherent potential for the wastes in SWMUs (and/or contaminated media at the facility) to cause future environmental releases or other risks to human health and the environment. There may be some situations where achieving substantial reductions in toxicity, mobility or volume may not be practical or even desirable. Examples might include large, municipal-type landfills, or wastes such as unexploded munitions that would be extremely dangerous to handle, and for which the short-term risks of treatment outweigh potential long-term benefits. Estimates of how much the corrective measures alternatives will reduce the waste toxicity, volume, and/or mobility may be helpful in applying this favor. This may be done through a comparison of initial site conditions to expected post-corrective measure conditions.

c. Short-term Effectiveness

Short-term effectiveness may be particularly relevant when remedial activities will be conducted in densely populated areas, or where waste characteristics are such that risks to workers or to the environment are high and special protective measures are needed. Possible factors to consider include fire, explosion, exposure to hazardous substances and potential threats associated with treatment, excavation, transportation, and redisposal or containment of waste material.

d. Implementability

Implementability will often be a determining variable in shaping remedies. Some technologies will require state or local approvals prior to construction, which may increase the time necessary to implement the remedy. In some cases, state or local restrictions or concerns may necessitate eliminating or deferring certain technologies or remedial approaches from consideration in remedy selection. Information to consider when assessing implementability may include:

1. The administrative activities needed to implement the corrective measure alternative (e.g., permits, rights of way, off-site approvals, etc.) and the length of time these activities will take;
2. The constructability, time for implementation, and time for beneficial results;
3. The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
4. The availability of prospective technologies for each corrective measure alternative.

e. Cost

The relative cost of a remedy may be an appropriate consideration, especially in those situations where several different technical alternatives to remediation will offer equivalent protection of human health and the environment, but may vary widely in cost. However, in those situations where only one remedy is being proposed, the issue of cost would not

need to be considered. Cost estimates could include costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, training, operation and maintenance, etc.

F. Recommendation by Permittee/Respondent for a Final Corrective Measure Alternative

In the CMS Report, the Permittee/Respondent may recommend a preferred remedial alternative for consideration by the Department. Such a recommendation should include a description and supporting rationale for the proposed remedy, consistent with the remedial standards and the decision favors discussed above. Such a recommendation is not required and the Department still retains the role of remedy selection.

G. Public Involvement Plan

After the CMS has been performed by the Permittee/Respondent and the Department has selected a preferred alternative for proposal in the Statement of Basis, it is the agency's policy to request public comment on the Administrative Record and the proposed corrective measure(s). Changes to the proposed corrective measure(s) may be made after consideration of public comment. The Department may also require that the Permittee/Respondent perform additional corrective measures studies. If the public is interested, a public meeting may be held. After consideration of the public's comments on the proposed corrective measure, the agency develops the Final Decision and Response to Comments (RTC) to document the selected corrective measure, the agency's justification for such selection, and the response to the public's comment. Additional public involvement activities may be necessary, based on facility specific circumstances.

Section III: Progress Reports

The Permittee/Respondent will, at a minimum, provide the Department with signed [monthly, bimonthly, or quarterly] progress reports. These reports may be required to contain the following information, but agency requirements are not limited to this list:

1. A description and estimate of the percentage of the CMS completed;
2. Summaries of *all* findings in the reporting period, including results of any pilot studies;
3. Summaries of *all* changes made in the CMS during the reporting period;

4. Summaries of *all* contacts with representative of the local community, public interest groups or State government during the reporting period;
5. Summaries of *all* contacts made regarding access to off-site property;
6. Summaries of *all* problems encountered during the reporting period;
7. Actions being taken to rectify problems;
8. Changes in relevant personnel during the reporting period;
9. Projected work for the next reporting period; and
10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Section IV: Proposed Schedule

The Permittee Respondent will provide the Department with CMS reports according to the following schedule:

<u>Facility Submission</u>	<u>Due Date</u>
CMS Workplan (Section I)	45 days after Department requests it
Draft CMS Report (Section II)	90 days after CMS Workplan Approval
Final CMS Report (Sections II)	30 days after the Department comments on Draft CMS Report
Progress Reports on Sections I and II	MONTHLY

ATTACHMENT 11

SCOPE OF WORK FOR CORRECTIVE MEASURES IMPLEMENTATION

Purpose

The purpose of the Corrective Measures Implementation (CMI) program is to design, construe, operate, maintain and monitor the performance of the corrective measure or measures selected by the Department. Corrective measures are intended to protect human health and/or the environment from releases from the facility. The Permittee/Respondent will furnish all personnel, materials and services necessary to implement the corrective measures program.

Scope

The documents required for Corrective Measures Implementation are, unless the Department specifies otherwise, a Conceptual Design, Operation and Maintenance Plan, Intermediate Plans and Specifications, Final Plans and Specifications, Construction Workplan, Construction Completion Report Corrective Measure Completion Report, Health and Safety Plan, Public Involvement Plan, and Progress Reports. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If the Permittee/Respondent can justify, to the satisfaction of the Department, that a plan and/or report or portions thereof are not needed in the given site-specific situation, then the Department may waive that requirement.

The Department may require the Permittee/Respondent to conduct additional studies beyond what is discussed in the SOW's in order to support the CMI program. The Permittee/Respondent will furnish all personnel, materials and services necessary to conduct the additional tasks.

The CMI consists of the following components, which for clarity are designated as sections in this Scope of Work.

Section I: Conceptual Design (15% Design Point)

- A. Introduction/Purpose
- B. Corrective Measures Objectives

- C. Conceptual Model of Contaminant Migration
- D. Description of Corrective Measures
- E. Project Management
- F. Project Schedule
- G. Design Criteria
- H. Design Basis
- I. Waste Management Practices
- J. Required Permits
- K. Long-lead Procurement Considerations
- L. Appendices

Section II. Operation and Maintenance Plan

- A. Introduction/Purpose
- B. Project Management
- C. System Description
- D. Personnel Training
- E. Start-up Procedures
- F. Operation and Maintenance Procedures
- G. Replacement Schedule for Equipment and Installed Components
- H. Waste Management Practices
- I. Sampling and Analysis

- J. Corrective Measure Completion Criteria
- K. Operation and Maintenance Contingency Procedures
- L. Data Management and Documentation Requirements

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

Section IV: Final Plans and Specifications (100% Design Point)

Section V: Construction Workplan

- A. Introduction/Purpose
- B. Project Management
- C. Project Schedule
- D. Construction Quality Assurance/Quality Control Programs
- E. Waste Management Procedures
- F. Sampling and Analysis
- G. Construction Contingency Procedures
- H. Construction Safety Procedures
- I. Documentation Requirements
- J. Cost Estimate/Financial Assurance

Section VI: Construction Completion Report

Section VII: Corrective Measure Completion Report

Section VIII: Health and Safety Plan

Section IX: Public Involvement Plan

Section X: Proposed Schedule

Section I: Conceptual Design (15% Design Point)

The Permittee/Respondent shall prepare a Conceptual Design (CD) that clearly describes the size, shape, form, and content of the proposed corrective measure; the key components or elements that are needed; the designer's vision of the corrective measure in the form of conceptual drawings and schematics; and the procedures and schedules for implementing the corrective measure(s). It should be noted that more than one conceptual design may be needed in situations where there is a complex site with multiple technologies being employed at different locations. The Department may require approval of the CD prior to implementation. The CD must, at a minimum, include the following elements:

- A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.
- B. Corrective Measures Objectives: Discuss the corrective measure objectives including applicable media cleanup standards.
- C. Conceptual Model of Contaminant Migration: Present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to groundwater, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document.
- D. Description of Corrective Measures: Considering the conceptual model of contaminant migration, qualitatively describe what the corrective measure is supposed to do and how it will function at the facility. Discuss the feasibility of the corrective measure and its ability to meet the corrective measure objectives.
 - 1. Data Sufficiency: Review existing data needed to support the design effort and establish whether or not there is sufficient accurate data available for this purpose. The Permittee/Respondent must summarize the assessment findings and specify any additional data needed to complete the corrective measure design. The Department may require or the Permittee/Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for

any new-sampling and analysts plans and/or treatability study workplans will be determined by the Department and will be included in the project schedule.

- E. **Project Management:** Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure design and the implementation effort (including contractor personnel).
- F. **Project Schedule:** The project schedule must specify all significant steps in the process and when all CMI deliverables (e.g., Operation and Maintenance Plan, Corrective Measure Construction Workplan, etc.) are to be submitted to the Department.
- G. **Design Criteria:** Specify performance requirements for the overall corrective measure and for each major component. The Permittee/Respondent must select equipment that meets the performance requirements.
- H. **Design Basis:** Discuss the process and methods for designing all major components of the corrective measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.
 - 1. Conceptual Process/Schematic Diagrams.
 - 2. Site plan showing preliminary plant layout and/or treatment area.
 - 3. Tables listing number and type of major components with approximate dimensions.
 - 4. Tables giving preliminary mass balances.
 - 5. Site safety and security provisions (e.g., fences, fire control, etc.).
- I. **Waste Management Practices:** Describe the wastes generated by the construction of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.
- J. **Required Permits:** List and describe the permits needed to construct and operate the corrective measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

- K. Long-Lead Procurement Considerations: The Permittee/Respondent shall prepare a list of any elements or components of the corrective measure that will require custom fabrication or for some other reason must be considered as long-lead procurement items. The list must include the reason why the items are considered long-lead items, the length of time necessary for procurement, and the recognized sources of such procurement.
- L. Appendices including:
 - 1. Design Data - Tabulations of significant data used in the design effort;
 - 2. Equations - List and describe the source of major equations used in the design process;
 - 3. Sample Calculations - Present and explain one example calculation for significant or unique design calculations; and
 - 4. Laboratory or Field Test Results.

Section II: Operation and Maintenance Plan

The Permittee/Respondent shall prepare an Operation and Maintenance (O&M) Plan that outlines procedures for performing operations, long term maintenance, and monitoring of the corrective measure. A draft Operation and Maintenance Plan shall be submitted to the Department simultaneously with the draft Plans and Specifications (see Section III). A final Operation and Maintenance Plan shall be submitted to the Department simultaneously with the final Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

- A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.
- B. Project Management: Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will operate and maintain the corrective measures (including contractor personnel).
- C. System Description: Describe the corrective measure and identify significant equipment.
- D. Personnel Training: Describe the training process for DEEM personnel. The Permittee/Respondent shall prepare, and include in the technical specifications governing treatment systems, the contractor requirements for providing:

appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

- E. **Start-Up Procedures:** Describe system start-up procedures including any operational testing.
- F. **Operation and Maintenance Procedures:** Describe normal operation and maintenance procedures including:
 - 1. Description of tasks for operation;
 - 2. Description of tasks for maintenance;
 - 3. Description of prescribed treatment or operation conditions; and
 - 4. Schedule showing frequency of each O&M task.
- G. **Replacement Schedule for Equipment and Installed Components.**
- H. **Waste Management Practices:** Describe the wastes generated by operation of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.
- I. **Sampling and Analysis:** Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee/Respondent shall prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements and sample analyses performed during these activities. The Permittee/Respondent shall use quality assurance, quality control, and chain-of-custody procedures approved by the Department. These procedures are described in the soon to be released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5), which will replace Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS 005/80, December 29, 1980.
- J. **Corrective Measure Completion Criteria:** Describe the process and criteria (e.g., groundwater cleanup goal met at all compliance points for 1 year) for determining when corrective measures have achieved media cleanup goals. Also describe the process and criteria for determining when maintenance and monitoring may cease. Criteria for corrective measures such as a landfill cap must reflect the need for long-term monitoring and maintenance. Satisfaction of the completion criteria will trigger preparation and submittal of the Corrective Measures Completion Report.

K. O&M Contingency Procedures:

1. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures;
2. Alternate procedures to be implemented if the corrective measure suffers complete failure. The alternate procedures must be able to prevent release or threatened releases of hazardous wastes or constituents which may endanger human health and/or the environment or exceed media cleanup standards;
3. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), the Permittee/Respondent will orally notify the Department within 24 hours of the event and will notify the Department in writing within 72 hours of the event. Written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and
4. Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications and/or will not achieve the cleanup goals in the expected time frame. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure were to fail, then the secondary would be implemented. This section would thus specify that if the primary corrective measure failed, then design plans would be developed for the secondary measure.

L. Data Management and Documentation Requirements: The O&M Plan shall specify that the Permittee/Respondent collect and maintain the following information:

1. Progress Report Information
2. Monitoring and laboratory data;
3. Records of operating costs; and
4. Personnel, maintenance and inspection records.

These data and information should be used to prepare Progress Reports and the Corrective Measure Completion Report.

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

The Permittee/Respondent shall prepare draft Plans and Specifications that are based on the Conceptual Design but include additional design detail. A draft Operation and Maintenance Plan and Construction Workplan shall be submitted to the Department simultaneously with the draft Plans and Specifications. The draft design package must include drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to the Department, the Permittee/Respondent shall:

- Proofread the specifications for accuracy and consistency with the conceptual design and
- Coordinate and cross-check the specifications and drawings.

Section IV: Final Plans and Specifications (100% Design Point)

The Permittee/Respondent shall prepare Final Plans and Specifications that are sufficient to be included in a contract document and be advertised for bid. A final Operation and Maintenance Plan and Construction Workplan shall be submitted to the Department simultaneously with the final Plans and Specifications. The final design package must consist of the detailed drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams

- Mechanical Drawings
- Electrical Drawings
- Piping and Instrumentation Diagrams
- Structural Drawings
- Excavation and Earthwork Drawings
- Site Preparation and Field Work Standards
- Construction Drawings
- Installation Drawings
- Equipment Lists
- Detailed Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the final project specifications to the Department, the Permittee/Respondent shall proofread the specifications for accuracy and consistency with the preliminary design; and coordinate and cross-check the specifications and drawings.

Section V: Construction Workplan

The Permittee/Respondent shall prepare a Construction Workplan which documents the overall management strategy, construction quality assurance procedures and schedule for constructing the corrective measure. A draft Construction Workplan shall be submitted to the Department simultaneously with the draft Plans and Specifications and draft Operation and Maintenance Plan. A final Construction Workplan shall be submitted to the Department simultaneously with the final Plans and Specifications and final Operation and Maintenance Plan. Upon receipt of written approval from the Department, the Permittee/Respondent shall commence the construction process and implement the Construction Workplan in accordance with the schedule and provisions contained therein. The Construction Workplan must be approved by the Department prior to the start of corrective measure construction. The Construction Workplan must, at a minimum, include the following elements:

- A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.
- B. Project Management: Describe the construction management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure construction effort and provide construction quality assurance/quality control (including contractor personnel).
- C. Project Schedule: The project schedule must include timing for key elements of the bidding process, timing for initiation and completion of all major corrective

measure construction tasks as specified in the Final Plans and Specifications, and specify when the Construction Completion Report is to be submitted to the Department.

- D. **Construction Quality Assurance/Quality Control Programs:** The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria, plans, and specifications. The Construction Workplan must include a complete Construction Quality Assurance Program to be implemented by the Permittee/Respondent.
- E. **Waste Management Procedures:** Describe the wastes generated by construction of the corrective measure and how they will be managed.
- F. **Sampling and Analysis:** Sampling and monitoring activities may be needed for construction quality assurance/quality control and/or other construction related purposes. To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee/Respondent shall prepare a Quality Assurance Project Plan (QAPjP) to document all monitoring procedures, sampling, field measurements and sample analysis performed during these activities. The Permittee/Respondent shall use quality assurance, quality control, and chain-of-custody procedures approved by the Department.

These procedures are described in the soon to be released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5), which replaces Interim Guidelines and specifications for Preparing Quality Assurance Project Plans, QAMS 005/80, December 29, 1980.

- G. **Construction Contingency Procedures:**
 - 1. Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of the Department, must be included in the Construction Workplan;
 - 2. The Construction Workplan must specify that, in the event of a construction emergency (e.g. fire, earthwork failure, etc.), the Permittee/Respondent will orally notify the Department within 24 hours of the event and will notify the Department in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and

3. Procedures to be implemented if unforeseen events prevent corrective measure construction. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure could not be constructed, then the secondary would be implemented. This section would thus specify that if the primary corrective measure could not be constructed, then design plans would be developed for the secondary measure.

H. Construction Safety Procedures: Construction safety procedures should be specified in a separate Health and Safety Plan. [See Section VIII]

I. Documentation Requirements

The Permittee/Respondent shall describe how analytical data and results will be evaluated, documented, and managed. [See Appendix B]

J. Cost Estimate/Financial Assurance

Financial assurance for corrective measure construction and operation may be required by an enforcement order, facility permit, or permit modification. The Construction Workplan must include a cost estimate and specify which financial mechanism will be used and when the mechanism will be established. The cost estimate shall include both construction and operation and maintenance costs. An initial cost estimate shall be included in the draft Construction Workplan and a final cost estimate shall be included in the final Construction Workplan. The financial assurance mechanism may include a performance or surety bond, a trust fund, a letter of credit, financial test and corporate guarantee equivalent to that in 40 CFR. 5 265.143 or any other mechanism acceptable to the Department.

Financial assurance mechanisms are used to assure the Department that the Permittee/Respondent has adequate financial resources to construct and operate the corrective measure.

Section VI: Construction Completion Report

The Permittee/Respondent shall prepare a Construction Completion (CC) Report which documents how the completed project is consistent with the Final Plans and Specifications. A CC Report shall be submitted to the Department when the construction and any operational tests have been completed. The CC Report shall, at a minimum, include the following elements:

1. Purpose;
2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications;
3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project;
4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria;
5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed;
6. Summary of any inspection findings (include copies of key inspection documents in appendices);
7. As built drawings or photographs; and
8. Schedule indicating when any treatment systems will begin full scale operations.

Section VII: Corrective Measure Completion Report

The Permittee Respondent shall prepare a Corrective Measure Completion (CMC) Report when the Permittee/Respondent believes that the corrective measure completion criteria have been satisfied. The purpose of the CMC Report is to fully document how the corrective measure completion criteria have been satisfied and to justify why the corrective measure and/or monitoring may cease. The CMC Report shall, at a minimum, include the following elements:

1. Purpose;
2. Synopsis of the corrective measure;
3. Corrective Measure Completion Criteria: Describe the process and criteria for determining when corrective measures, maintenance and monitoring may cease. Corrective measure completion criteria were given in the final Operation and Maintenance (O&M) Plan;
4. Demonstration that the completion criteria have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria;

5. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.);
6. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed;
7. Summary of inspection findings (include copies of key inspection documents in appendices); and
8. Summary of total operation and maintenance costs.

Section VIII: Health and Safety Plan

The Permittee/Respondent shall submit a Health and Safety Plan for all field activity, although it does not require review and approval by the Department. The Health and Safety Plan shall be developed as a stand alone document but may be submitted with the CMI Workplan. The Health and Safety Plan must, at a minimum, include the following elements

1. Objectives: Describe the goals and objectives of the health and safety program (must apply to on-site personnel and visitors). The health and safety plan must be consistent with the Facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), all state and local regulations and other Department guidance as provided.
2. Hazard Assessment: List and describe the potentially hazardous substances that could be encountered by field personnel during construction and/or operation and maintenance activities. Discuss the following:
 - Inhalation Hazards
 - Dermal Exposure
 - Ingestion Hazards
 - Physical Hazards
 - Overall Hazard Rating

Include a table that, at a minimum, lists: known contaminants, highest observed concentration, media, symptoms/effects of acute exposure.

3. Personal Protection/Monitoring Equipment
 - Describe personal protection levels and identify all monitoring equipment for each operational task.

- Describe any action levels and corresponding response actions (i.e., when will levels of safety be upgraded).
- Describe decontamination procedures and areas.

4. Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a facility map showing emergency station locations (first aid, eye wash areas, etc.).

Section IX: Public Involvement Plan

All Public Involvement Plans prepared by the Permittee/Respondent shall be submitted to the Department for comment and approval prior to use. Permittees/Respondents must never appear to represent or speak for the Department before the public, other government officials, or the media.

Public Involvement activities that may be required of the Permittee/Respondent include, the following:

1. Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to agency officials and Permittee/Respondent on a one-to-one basis;
2. Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the Department prior to public distribution);
3. Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
4. Maintaining an easily accessible repository (such as a town hall or public library or the facility itself, in some limited circumstances) of information

on the facility-specific corrective action program, including the order or permit, approved workplans, and/or other reports.

A schedule for community relations activities shall be included in the Public Involvement Plan.

Section X: Proposed Schedule

The Permittee/Respondent will provide the Department with CMI reports according to the following schedule:

<u>Facility Submission</u>	<u>Due Date</u>
Conceptual Design (Section I)	90 days from the Department's approval of the CMS
Operation and Maintenance Plan (Section II)	45 days after the Conceptual Design approval
Intermediate Plans and Specifications (Section III)	45 days after Conceptual Design Approval
Final Plans and Specifications (Section IV)	45 days after the Department comments on Intermediate Plans and Specifications (date of approval may be tied to submittal of the CMI Workplan, if required)
Construction Workplan (Section V)	Concurrent with Final Plans and Specifications (or approval thereof)
Construction Completion Report (Section VI)	45 days after the completion of work
Corrective Measure Completion Report (Section VII)	45 days after the completion of Corrective Measures (based on when completion criteria are believed to have been satisfied)

Health and Safety Plan
(Section VIII)

90 days from CMS approval

Public Involvement Plan
(Section IX)

90 days from CMS approval

Progress Reports on
Sections I through IX

MONTHLY

ATTACHMENT 12

SCOPE OF WORK FOR PROGRESS REPORTS

The Permittee/Respondent will, at a minimum, provide the Department with signed monthly progress reports during all phases of all interim measures and corrective action required pursuant to this order. The Department may adjust the frequency of progress reporting to address site-specific needs. For example, more frequent progress reports may be needed to track critical activities such as corrective measure construction and start-up. Progress reports must, at a minimum, include the following elements:

1. A description of significant activities (e.g., sampling events, inspections, etc.) and work completed/work accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.) during the reporting period;
2. Summary of system effectiveness. Provide a comparison of system operation to predicted performance levels (applicable only during operation of the corrective measure);
3. Summaries of all findings (including any inspection results);
4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken and/or planned to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. If requested by the Department, the results of any sampling tests and/or other data generated during the reporting period.